REFLECTIONS

ON THE

Works of God

By

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Translated from the German

By The

Rev. [illegible] Balfour.

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PREFACE.

THE continued and increasing demand for the works of STURM has occasioned the present edition of his Reflections to be presented to the public, before whose tribunal they have so long been, that to descant now upon their nature, merits, and design, would be superfluous. It may, however, be briefly stated, that these reflections are calculated to enlarge the mind, and to purify the heart. they lead the attentive observer through the whole creation, inform him of its stupendous works, and conduct him within the temple of the great God, whilst they inculcate resignation to the divine will, humanity, benevolence, and the most amiable virtues which dignify and adorn human nature.

Several translations of this work have already appeared; but they are all either grossly inaccurate, and deficient in grammatical purity, or they are written in a tame insipid style, devoid of elegance and destitute of interest. Let it be remembered, that something more than merely expressing the thought is required, the harmony of the cadence, the rounding of the period, and the poising of the sentences, all are necessary to excite and to arrest the attention; and unless the attention be stimulated and stabilitated, it will be to very little purpose that the moralist disclaims, or the philosopher writes. For purposes merely didactic, when something is to be told that was not known before, a style the most naked and beggarly might, perhaps, be endured; because the novelty of the matter may induce us to overlook the poverty of the manner: not but, even in this case, the thought will receive additional strength and lustre from elegance and splendour of diction, as a beautiful woman appears more lovely when arrayed with neatness and simplicity, than when cloaked to the heels in very rags and tatters.

But against that inattention by which known truths are suffered to be neglected, insipid language or sterility of imagery makes no provision; is may, perchance, instruct, but can never persuade. Now although what Sturm says is very good, and very just; yet, as he wishes to lead us from the error of our ways to the wisdom of the just, it is necessary that he use every effort to impress upon our minds an earnest desire to follow him in his strains of piety and heavenly contemplations. He has many powerful obstacles to struggle against; such as, the obstinate resistance of our own perverted and corrupt hearts, and the allurements and example of an ignorant and imbrutified world, which will not listen to the voice of the charmer, charm he never so wisely.

We well know that the same truth, told in two different ways, shall have a very different effect upon our minds: let it be doled out to us in a droning, drowsy tone, and in homely, vulgar language, and we either sleep, or turn our backs upon the speaker; but let a man deliver this truth in appropriate diction, with impressive seriousness and awful solemnity, and it will penetrate to the inmost recesses of our heart. The same reasoning applies to writing; which may, indeed, be called speaking to the eye. We slumber over the page which is polluted by colloquial barbarisms, and deformed by continual outrages against accuracy and elegance. In such a situation is the invaluable Sturm placed by his translators; his thoughts are clouded by unseemly language, and buried by a tiresome abundance of repetitions. I do not mean to blame them for not having been sufficiently literal in their versions; because the idioms of the two languages are so different, that all the spirit of the original must vanish if the copy be made too close. The attempting to render word for word any work from one language into another, is a foolish and useless undertaking; because it precludes the possibility of expressing the sense of the author. It will be readily seen, therefore, that I do not mean to give a literal, but a liberal translation of Sturm his repetitions of the same things, and many such there are, I have avoided; some of his inaccuracies ventured to correct, and have omitted some trifling passages, which lessened the weight and dignity of the subject; and every-where, by an attention to style, have endeavoured to give it the spirit of an original work. In doing this I have been anxious to preserve the same fervent strain of piety which animated the worthy author; and in presenting this work to the public, in a more elegant dress and convenient form, I am not conscious of having at all perverted the spirit of the original, or derogated from the dignity of the subject. This edition, though translated by the same hand as that *erroneously* said to be by the *Author of* the *Adviser*, differs in some respects from that translation, which was composed very hastily, and came from the press with some inaccuracies. Some of the concluding sentences, which were omitted before, are now restored, as tending to promote the cause of religion and the practice of humanity; and many corrections have been made.

I cannot conclude, without sincerely congratulating the public upon the increase of piety, and the more general diffusion of knowledge, in this country. Our children are leaving the worse than foolish tales of Tom Thumb, Goody Two-shoes, Little Red Riding-hood, Jack the Giant-Killer, and many more productions of a like nature, all tending to vitiate their young minds, fill them with absurd notions, and encourage a love of the marvellous, and a dislike to plain truth; for works savouring more of probability, and tending to conduct them through the paths of virtue to the temple of fame. The present work I venture to recommend to young people, with a firm confidence in its improving the mind and ameliorating the heart. It will be particularly useful to those whose reading is not very extensive, as containing much information in natural history and natural philosophy, conveyed in language intelligible to young children; and everywhere abounding with devotion warm from the heart.

CONTENTS of VOLUME I.

A MEDITATION upon New-Year's Day
Winter has blessings which are often disregarded 3
God continually presides over his Creation 4
Uses and Advantages of Fire 5
Amusements of Winter 7
God's providential Care of the Animal Creation during Winter 9
The Beauties of the Winter 11
Vegetables which preserve their Verdure through the Winter 13
Singular State of Man during Sleep 15
Of the Advantages of our Climate 16
Snow conduces to the Earth's Fertility 18
Contemplation of the Heavenly Bodies 20
Discoveries which have been made by the Microscope 24
Advantages of Night 26
Reflections upon Self 27
The Damage occasioned by extraordinary Cold 29
Nature reposes during the Winter 31
Of the Laplanders 34
Wisdom displayed in the Structure of the Globe 36
Short Meditations upon the Works of God 38
Of the Human Voice 40
Necessity of reflecting upon God 43
The Fear of Apparitions 44
Subterraneous Fires 46
Of Comets 47
Of Snow 49
Rapidity with which Life passes away 50
Hoar-frost observed on the Glass of Windows 51
On the Use of Bread 52
Of the Duty in respect to Sleep 53
The Revolutions which are continually taking place in Nature 54
Every Thing in Nature conduces to the Good of Mankind 56
Of the Influence which Cold has upon Health 58
An Uniformity of Temperature disadvantageous to the Earth 60
Consideration of the Stars 62
Curious Formation of the Eye 65
The Fog 67
Of the Tides 69
The Sun is not always apparent 71
Of Earthquakes 73
Upon Life and Death 75
Formation of Ice 76
Spherical Figures of the Earth 78
Short Duration of Snow 80

CONTENTS.

PAGE

The Creation 81
Of Brutes 83
Of the Moon 85
Rain fertilises the Earth 88
Of the Shortness and Uncertainty of Life 89
Combustion generally diffused throughout Nature 91
Equal Distribution of the Seasons 93
Utility of our Senses considered 95
The Soul becomes elevated by reflecting upon God 97
Causes of the Vicissitude of Heat and Cold 100
Singularities in the Mineral Kingdom 101
God's Love for Man daily manifested 104
Tranquillity of the Night 105
Winter is an Emblem of Life 107
The Utility of Mountains 109
Powers of the Mind enlarged by contemplating God in the Works of Nature 111
Unpleasant Weather 113
State of certain Birds and Animals during the Winter 115
Wind and Tempests 116
Aurora Borealis 118
Power of God displayed in the minutest Objects 120
The Effects of Winter gradually depart 122
The external Parts of the Human Body 124
Hope of Spring 126
Hoar-frost 130
Means which contribute to fertilise the Earth —
Of the Advantages derived from the Sea 132
Difference existing between Animals and Plants 134
Uniformity and Diversity in the Works of Nature 136
Of Seeds 138
Grandeur and Distance of the Sun 140
Upon the imperfect Knowledge we have of Nature 142
The Utility of Vegetables 144
Structure of the Human Heart 146
The Change of Seasons 147
Every Thing created has its Use 149
Harmony between the Moral and Physical World 152
Of the Nature and Properties of Air 154
Nothing new under the Sun 156
Of Caves found in Mountains 158
Circulation of Sap in Trees —
Ignorance of Futurity 161
Gradual Approach of Night 162
Magnificence of God displayed in his Works 164
Arrangement of the Seasons in different Planets 166
Care of Providence for the Preservation of his Creatures 167
Hymn for the Commencement of Spring 170

Abuse of Animals 171
Motion of the Earth 173
Abundant Riches of Nature 17[illegible]
Sun-rise 178
Curious Structure of the Ear 180
The Milky-way 183
Germination of Plants 184
The azure Colour of the Sky 187
Necessity and Use of Air 188
Diversity of Soil 190
Necessity of Repose during the Night 192
Magnitude of the Earth 194
Generation of Birds 196
Prognostic Signs of the Weather 199
Position of the Sun 201
The Permanency of Corporeal Beings 202
Advantages of Rain 204
On Respiration 207
Proofs of the Goodness of God 208
Beneficial Influence of the Sun upon the Creation 210
Relations that all Creatures have for each other 213
Of the constituent Parts of Water 216
Propagation of Plants 218
Diversity of Traits in the Human Countenance 220
The universal Care of God over his Creatures 222
Flowers which bloom in April 224
Return of the Birds 226
The Utility of Forests 228
Pleasure derived from the Contemplation of Nature 230
The Glory of God seen in the Creation of Animals 232
Hymn of Praise upon the Beauties of Spring 234
System of the World 235
Blossoms of Trees 237
The continual Revolutions and Changes that take place in Nature 239
An Invitation to seek God in the Works of Nature 241
Morning 242
Vision 244
Spring renews the Face of the Earth 245
Germination of Seeds 247
Of the Chick in the Egg 248
Buds of Flowers 251
Indefatigable Labours of the Bee 253
Nourishment of Animals 255
Senses of Animals 257
Order observed in the Succession of Flowers 260
Zoophites 261

Pleasures derived from the Cultivation of Fields and Gardens 262
The Tulip 264
Reflections on Grass 266
Sentiments excited by the Contemplation of the Heavens 267
Fecundity of Plants 268
Description of the Beauties of Spring 271
Language of Animals 272
Number and Magnitude of Creatures upon the Earth 275
Spring, an Emblem of the Frailty of Human Life, and an Image of Death 277
Spring emblematical of the Resurrection of the Body 280
Attractive Power of Bodies 281
Complaints of Men against the Laws of Nature 283
Of the Sins to which we are the most prone during the Spring 286
Harmony of Bees 288
Prodigious Number of Plants upon the Earth 290
Plurality of Worlds 292
Hymn of Thanksgiving 294
Difference between the Works of Nature and of Art 295
Leaves of Trees 297
Vivifying Power of the Sun 299
Desires of the Soul unlimited 301
Utility of Rivers 304
Diversity of Flowers 306
Use of venomous Animals and Plants 308
Odour of Flowers 310
Multitude of Animals 312
Immensity of the Firmament 314
Peculiarities in the Vegetable Kingdom 317
Means of Happiness derived from Nature 320
The Magnet 322
Cherries 324
Wisdom displayed in the Structure of the Bodies of Animals 326
Dew 330
Mode of Life and Labours of Bees 333
External Part of Plants 335
Hymn of Thanksgiving for the Works of Nature 338
Caterpillars 339
Beginning of Summer 342
The Nightingale 344
The Pleasures which Summer affords to our Senses 346
Sketch of the internal Parts of the Human Body 348
Electricity 351
Manner in which Thunder is formed 354
Herrings 356
Eclipses of the Sun and Moon 358
The Stalk of Wheat 360
The Blight 362

REFLECTIONS

UPON

THE WORKS OF GOD,

AS DISPLAYED IN NATU[illegible]

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JANUARY

A Meditation upon Ne[illegible]

LET us consider this day as the [illegible], and venture to anticipate, from the g[illegible] God, a repetition of those benefits which we have received from our first entrance into the world, to the present period of our existence. What blessings may we not hope from that Being, which has ever watched over us with the tender solicitude of a father; which, at the hour of our birth, presented us, in our parents, with friends that have supplied all our wants, and supported us through the helpless and unprotected state of infancy?

Without their fostering care, how could we have preserved our health, and all the comforts which we now enjoy? Were it possible for us at that time to have reflected upon our destined fate, we should doubtless have looked forward with delight to the pleasures of our sublunary existence; now that we are capable of such reflections, it is pleasing to indulge the sensations our present happiness inspires, and our imagination dwells with rapture upon the sweet hopes of future felicity.

To-day a new career of life opens before us, in which, though more advanced to maturity, we still require a portion of that support we experienced when, feeble and destitute, we first drew our breath. In the hour of danger, and in the time of affliction, we feel the necessity of a friend to support us, and of a companion to cheer our drooping spirit, who can smooth life's rugged path, and heighten all her pleasures. And surely our Heavenly Father has already chosen for us such a friend; one who, when doubt and uncertainty perplex, will advise us how to act, and when misfortune threatens, will be our chief support and consolation; who, during the full tide of prosperity, will partake of our joys, and who will assist our reasoning faculties when enfeebled and enervated.

It was not by accident, or without design, that we came into the world. As a part of the great system of nature, our destiny is over-ruled by an all-seeing Providence, of whose designs respecting us we are ignorant, but who knows all, and governs all with wisdom and harmony; and whatever unknown disasters impend, or unexpected benefits await us, this present year, let us bow down with reverence and with gratitude to his Divine will. Whatsoever be our lot, whether to endure the chilling blasts of penury, or to suffer the heart-rending anguish of a once dear friend forgetting the ties of affection, let us strengthen our belief in the all-protecting arm of God. Though dangers may threaten, and persecutions afflict, we will yet look up to that Almighty Power which raised our feeble frame to its present state of hardihood, which cherished the tender bud from all the storms and perils that frowned upon its expansion; and we will believe that He, who thus protected our infancy, will not be less the father and the supporter of our old age.

JANUARY II.

Winter has Blessings which are often disregarded.

If we examine the works of God with attention, we shall find, even in this season, many subjects which may lead us to rejoice in the goodness of the Lord, and to exalt the miracles of his wisdom. During the budding spring, the bountiful summer, and the luxuriant autumn, when Nature from the most simple, assumes her gayest and most splendid robes, hardened and callous, indeed, must be that heart which does not throb with pleasure, and pulsate with gratitude, for such choice gifts. But when the north wind blows, when a biting frost stiffens the face of the earth, when the fields, stripped of their fruits, and divested of all their charms, present one wild desolating view, then it is that men of the greatest sensibility will sometimes forget to be grateful. But is it true, that the earth at this season is so utterly destitute of the blessings of Heaven, that it possesses nothing that can excite the emotions of gratitude and of piety in the heart of man? Certainly not. Let us only bestow more attention upon the works of nature, and we shall never find occasion to arraign the wisdom of God.

Reflect for a moment upon the misery of being exposed to the rigours of winter, with no clothes to defend your shivering frame, no fire to cheer and to animate your benumbed body; and then rejoice and be grateful for the favours you receive. You have every thing that can contribute to your comfort. Though you cannot penetrate through the veil which overshadows the creation, though the great First Cause of all things be hidden from your view, rest assured, that nothing is created in vain; all tends to one grand point, the glory of God, and the happiness of man.

JANUARY III.

God continually presides over his Creation.

Not to acknowledge the greatness and wisdom of God in the least of his works, as well as in great and extraordinary phenomena, betrays alike our ignorance and our weakness. The formation and evolution of the child in the mother's womb displays as much the power of God, as did the creation of the first man from the dust of the earth. Our own individual experience is sufficient to convince us, that a Supreme Being suspends the thread of our destiny. We cannot ensure for ourselves another moment's existence; a thousand unseen causes may hasten the period of its termination; what unknown evils may not be impending to stop the vital current, and forbid the pure air again to renovate our blood!

Every man may say, Alas! I feel my helpless state; I have no power to remove the infirmities that afflict me, nor ability to disperse the dangers that threaten; subject to a heavy train of bodily diseases, and mental imbecility, I feel that, without the support of the Almighty, I should, indeed, be miserable. The wonderful connection between my soul and my body, the continued pulsation of my heart, the constant secretion and circulation [illegible] various fluids in my body, all depending neither upon my will nor my power, contribute to assure me there is a great and powerful Being, at whose command these functions proceed with order and regularity, or stop, and my present existence ceases. If my breast still continues to heave, if the ruddy stream still warms my heart, if my muscles act with vigour, my senses remain perfect, and the thinking faculty be yet preserved, it is from God alone I derive such choice blessings. Why then do I so seldom think, with gratitude, upon the ways of Providence?

Ought not the reflections now presented ever to be deeply graven on the tablets of memory; and should it not be our morning and our evening care to muse upon, to admire, and to hail with gratitude, the blessings of our Creator?

JANUARY IV.

Uses and Advantages of Fire.

Fire is a very universal agent in perfecting the arts, and contributing to the comforts of life; and we find the principles of it are diffused throughout nature, in water as well as in air, and in all oleaginous substances. How useful to man are those combustible matters which supply him with fuel, and without a sufficiency of which he must suffer the greatest inconvenience, and lose incalculable advantages. Were it not for the fire which cheers us in winter, a great portion of our time must be passed in dreary darkness: without artificial light all our occupations and our amusements must cease with the departing sun; we should be obliged to remain at rest, or to wander with uncertainty and danger in midnight gloom. Consider how melancholy our lot must be, had we been obliged to pass the long evenings of winter without the enjoyments of society, and those superior sources of pleasure and instruction derived from reading and writing. How many of the productions of the earth would be useless to us were they not softened and prepared by means of fire! If fire was not had recourse to by artists, how many necessities would be unprovided for, and of what benefits should we not be deprived; without this element we should not be able to give to our garments the brilliancy of the scarlet, nor the richness of the purple; our metals, incapable of being melted, would remain useless in the depths of the earth; glass could not be formed from the sand; the beautiful utensils now in common use could not have been fashioned from the yielding clay; nor could our stately edifices rear their tops among the clouds, and bid defiance to the elements. Without fire, in vain would nature teem with riches; all her treasures would be useless, and her charms of no avail.

But we have no necessity to traverse nature to prove the blessing of fire; let us return from our flight, and contemplate our own apartment. Here, the fire diffuses a genial warmth through the whole room, and the air is rendered mild. Without the stimulating influence of fire, during the strong frosts, we should become inactive, and subject to many unpleasant sensations; the aged and the weak would perish: and what would become of the little infant, if the chilly blasts were not tempered to its delicate limbs? Oh, unfortunate poor! ye who, with scarcely bread to support your miserable existence, are at this severe season obliged to deprive yourselves of a portion of that pittance to procure fuel to warm your shivering body; how I feel for your wants! how my heart bleeds for your distressed condition! But your hard lot recalls to my mind the great favours I have received from Heaven, for which I am not sufficiently grateful. I feel the obligation I am under to a gracious God; who, I pray, as he has given me the means, will open my heart to relieve those afflictions in others from which I myself am exempt. O God, my Creator and Benefactor, condescend still to look down upon me! Behold my heart swells with praises and thanksgivings to thee my Eternal Parent, the Author of all the comforts which I now enjoy. Continue to grant me the benign influence of fire; and may this element never become the instrument of vengeance to me or my brethren!

JANUARY V.

Amusements of Winter.

DURING this season, which many people imagine possesses few charms, each individual following his inclination endeavours to find amusements to enliven the long winter evenings. Many pursue one continued round of riot and dissipation. It is indeed truly lamentable to see so many people by indolence, or frivolous pursuits, contriving to lose the days already too short. The course of the day is commonly filled with a circle of occupations, which neither correspond to the dignity of man, nor the destination of his soul. Late in the morning the voluptuary rises from his bed; during breakfast he plans out the amusements of the day; then abandoning himself to every species of idleness, awaits the hour of dinner; which arrived, he gives himself up to the pleasures of the table. Gorged with excess, he throws himself upon a couch to recruit his exhausted powers. The hour comes when he is to meet a numerous party. He sits down to play. For the first time since the sunbeams irradiated the east, he appears to possess a soul: with cards in his hand the hours fly rapidly. At length this sensual wretch quits his cards for another debauch, and reels from table to bed; but sleep does not gently overpower his senses, and wrap his soul in sweet forgetfulness. Pain and watching oppress him, or frightful dreams disturb his troubled slumbers.

How ingenious is man in devising trifling amusements to abridge the few moments allotted him! Sometimes the pleasures of the chase call him from his home, that he may enjoy the gratification of seeing the timid hare, and the panting deer, fly with the speed of wind to escape their cruel pursuers; or that he may have the satisfaction of viewing them in their last sad agonies, torn and mangled, and hear their piercing cries, mingled with the savage howl of dogs and men, reverberated from the neighbouring hills.

The ball allures with meretricious charms; and there innocence of heart is often exchanged for sorrow and disease. At one time feasts invite: at another, diversions and public places; all tending to mislead and corrupt. Having enumerated a sufficient specimen of the amusements of winter, let me conclude with reminding my fellow-creatures of the part they ought to act respecting such diversions. I wish not to discourage and repress that inclination for social intercourse, which, particularly at this season of the year, is highly delightful; but I wish you not to suffer it to take such firm hold of your mind as to become a passion. Allowing that when you meet together nothing passes that can derogate from virtue and good manners, yet such parties may be hurtful by consuming too much of your time, and occasioning the neglect of your domestic economy. Pleasure is not the business of our lives; the power of obtaining it is granted us by a beneficent God, to serve for a relaxation from the severer duties of business or study. To be too eager in the pursuit of pleasure is at the risk of never obtaining your end, or of acquiring that which may ultimately produce sorrow and remorse. Be very careful then with what society you mix; lavish not your time in those amusements which you cannot enjoy without injuring your virtue, your reputation, or the peace of your family. Let not those heedless pleasures that disturb your neighbours, excite their lamentations, and fill them with sorrow, and by which you may be lost to the duties of society and of religion, ever find access to your heart. Suffer not even the most innocent gratifications to render you insensible to the pure and permanent pleasures of Christianity, or to make you dissatisfied with your more serious occupations.

STURM'S REFLECTIONS

Let it not be sufficient for us to supply our own wants
but let us endeavour to supply those of others. — Jan. 6.

Oh God! govern with thy gracious influence our hearts; and grant that amidst earthly enjoyments we may never forget thy most holy name. That in our intercourse with men, the remembrance of thy presence may secure us from temptations, and that from day to day we may become more and more devoted to the exercise of our duties as Christians, as parents, and citizens; whilst we shun those fleeting pleasures which so easily allure us from the path of rectitude, and diminish our zeal for good works. What inducement can we have to seek for frivolous amusements, when we possess within ourselves the sources of the most pure and refined pleasures? The contemplation of the great works of nature at all times is grand, and fills the mind with wonder and reverence for the Creator. In winter, as well as in the other seasons, they shine forth equally manifest. The starry heavens, the fields, far as the eye can reach, covered with snow, inspire the noblest and most sublime ideas, create a constant succession of pleasure, and elevate and dignify the soul.

JANUARY VI.

God's providential Care of the Animal Creation during Winter.

MILLIONS of rational beings, dispersed among the various nations of the earth, are provided at this season with every thing necessary to supply their wants, or add to their comforts. But *Divine* goodness is not extended to man alone; it is diffused over the whole creation; and infinitely more numerous than the children of Adam are the animated beings partaking of it. Admirable as is the preservation of the human species, God gives still greater proofs of his wisdom and power in the care which he manifests for the brute creation. That the innumerable tribes of animals existing on this globe find, during the continuance of summer, food and shelter, is not surprising; all nature teeming with fertility conduces to this great end; but that in this season of the year such numbers of creatures—birds, quadrupeds, reptiles, insects, and fishes—should continue to exist, must demand the admiration of every reflecting being. Nature has provided most animals with a covering to defend them from the winter's cold, as well as from the summer's heat. Those wild animals which dwell amid the forest and the desert are so admirably organized, that their hair, as summer advances, begins to fall from the skin, and grows again in winter with such luxuriance as to become a thick fur, capable of preserving them from the severity of the season.

When cold renders a place of security requisite, other species of animals find retreats; some under the bark of trees, others in the crevices of old buildings, and some within the clefts of rocks, and in the caverns of mountains. It is there they either live upon the food which instinct has taught them to provide, or they are nourished and supported by the fat which they had previously secreted, or they pass the tedious length of winter in a state of torpescent insensibility, each according to the habits of its tribe. Birds at the approach of winter retire to sheltered places; and some species possess an instinct, which leads them at the commencement of cold to quit the frozen regions of the north, winging their bold and arduous flight for more genial climes.

The resources of those animals which do not change their abode in winter are various. Birds feed upon the insects which they are taught to seek amongst the moss and in the clefts of the bark of trees; many animals live upon the provisions they have providently stored in their dens during the summer, others are obliged to burrow beneath the ice and the snow to find support. Many species of insects and of fishes, though confined within marshes stiff by the frost, and in rivers whose surfaces are frozen, yet preserve their vitality.

Let us then unite in adoration of the all-powerful and merciful Creator, whose majesty and whose grandeur cover all the creatures of the earth; all of which, from the stately elephant to the most feeble and minute animals under the heavens, owe to him their life, their abodes, and their support. Where nature seems barren and destitute of resources, he still finds means to make her productive. Let these considerations strengthen our confidence in God, and banish from our minds all doubts of the continuance of his protection and support during the rigours of winter.

That God who provides a covering for animals, who points out to them secure retreats in the caves of the mountains, will also know how to clothe thee, O man! And he who supplies them with food and with warmth, even beneath the ice and the snow, will ever be thy support, and thou wilt find a sure harbour, where thy days may glide in peace and in tranquillity, safe from storms and commotions. Let such reflections as these raise in thy bosom a desire to imitate, as far as thy abilities permit, the generous cares of Divine Providence, by contributing to the preservation and happiness of thy fellow-creatures, and of the whole animal creation.

JANUARY VII.

The Beauties of the Winter.

Every season has its peculiar pleasures and beauties; and however destitute of charms winter may appear to some people, it has still a portion to interest the feelings. For the benefit of those who, from prejudice and ignorance, murmur and repine against this season, I will here enumerate some of the particular pleasures which it offers us.

How delightful is the face of nature when the morning light first dawns upon a country embosomed in snow! The thick mist which obscured the earth, and concealed every object from our view, at once vanishes. How beautiful are the tops of the trees, hoary with frost! The hills and the valleys, reflecting the sun-beams, assume various tints: all nature is animated by the genial influence of the bright luminary, which now invites the warbling songsters from the groves to make jocund the day with their harmonious notes. If nature, during the absence of the sun, droops and is overspread with gloom; when the horizon is again illumined with cheering rays she resumes her wonted gaiety, and, robed in white, delights the traveller with her novel and delicate appearance. How beautiful to see the white hills, the forests, and the groves, all sparkling! What a delightful combination these objects present! Observe the brilliancy of those hedges! See the lofty trees bending beneath their dazzling burthen! The surface of the earth appears one vast plain mantled in white and splendid array.

Little, indeed, are the feelings of those to be envied upon whom these grand phenomena make no impression; beings who can contemplate with indifference a spectacle which ought to gladden their hearts and fill their souls with the majesty of heaven, and the boundless wisdom and immeasurable goodness of an all-powerful God. Such reflections, arising from the contemplation of his works, always produce satisfaction and delight. The heavens may lower, the agitation of the air portend a storm, and nature, losing her sweetest attractions, appear bleak, wild, and desolate; yet the soul, retiring within itself, derives energy and an exalted pleasure in tracing, by his works, the power, the wisdom, and benignity of the Godhead.

JANUARY VIII.

Of the Vegetables which preserve their Verdure through the Winter.

AT this season of the year the earth, losing the variety of charms which so lately beautified her surface, seems solitary and destitute: and may be compared to a tender mother, who has been bereft of her dearest children, and is seen to mourn and lament. But she is not deprived of all her offspring; here and there plants are seen to brave the rigours of winter, and by their verdure relieve the sterility of the scene. Here the hawthorn's tempting berries offer the feathered race a sweet repast; the ever-verdant laurustinus now delights with its clustering flowers; and the never-fading yew-tree forms a dark shade The creeping ivy still winds round the mouldering battlements, and defies the whistling wind and the storm's loud roar; the laurel blooms with verdure undiminished; and the lowly box looks green above the snow. These, with many other plants, preserve their verdant hue amid every severity of season and rigour of climate. They may present a pleasing emblem of the ever-durable advantages he possesses whose mind is amply stored, and whose amiable disposition makes all around him smile with joy and pleasure. The splendour of dress, and the profusion of ornaments, which dazzle and fascinate the weak and the vulgar, are vain and transitory; colours that vie with the rainbow in brilliancy fade; the pride of youth, beauty smiling with every grace and symmetry of form, flutter awhile amid the sun-beams, and are seen no more; but the charms of virtue last for ever. The man who fears God "resembles a tree, which, planted on the banks of a rivulet, as it grows to maturity expands, and stretches forth its branches far round with unfading verdure, and produces its fruits in season; it offers an ever-refreshing shade, and the weary traveller blesses it."

How amiable is the truly pious man! His ornaments are within, and his virtue shines forth with beauty unborrowed of the external and adventitious smiles of fortune. The storms of adversity may shake, but can never overpower him; though for a moment cast down, his bold front soon towers above the tempest. If misfortune darkens his horizon, and poverty frowns, he is still blessed with riches that wealth cannot purchase—the love of God, a good conscience, and the bright hope of a glorious immortality.

This reflection leads me to the idea of a benevolent old man, who in the winter of his life resembles those plants which at that season still preserve their verdure. How many storms of fortune has he not braved with constancy! How many dear attracting objects have withered in his sight! He yet exists, whilst many of his contemporaries are mingled with the silent dust. A mild cheerfulness still plays on his cheeks. Though his forehead be wrinkled, and the strong hand of time mark his venerable countenance, and render feeble his frame, his virtues recompense his lost vigour; he lives again in his offspring, and his wisdom, his integrity, and his experience, are held up as a noble example to his children's children.

JANUARY IX.

Singular State of Man during Sleep.

We need not have recourse to extraordinary events to be convinced of the inconceivable power and wisdom of God; we have only to look around us. He shines conspicuously in the least of his works. Of the many remarkable things of which he is the author, I wish to call your attention to one, which, because it daily occurs, is not the less deserving of your observation. Often as you have been refreshed by sleep, perhaps you have never reflected upon this singular state, nor regarded it as one of the most extraordinary effects of Divine goodness. When sleep overpowers us with a pleasing forgetfulness, we do not think it wonderful; we believe our body is formed for such a state, and that the inclination, prompting us to indulge in sleep, proceeds from natural causes. But perhaps we may with propriety consider sleep under two points of view. On the one hand there is nothing to be observed which may not result from the peculiar nature of our organization; on the other, there is something so striking and wonderful in this natural effect, that any labour bestowed upon the consideration of it will be amply compensated.

Sleep comes upon us imperceptibly; if we endeavour to ascertain the exact moment, the attention we give will be an obstacle to its approach; nor shall we be able to sleep till all such ideas are dissipated. Sleep comes unsolicited; the more efforts we make to obtain it, the less likely are we to succeed. God has so appointed sleep, that it becomes an agreeable necessity; and he has rendered it independent of our reason and of our will. Let us pursue this consideration, and muse upon the wonderful state we are in during sleep. We live without being conscious of our existence. The functions all act with their wonted regularity. The activity of the soul, for a space, seems to be suspended; the senses are benumbed, the muscles inactive, and all voluntary motion has ceased. In short, the state of sleep is truly wonderful, and very much resembles that of death: who can think of sleep without being at the same time reminded of death; which, sooner or later, will imperceptibly steal upon us, or seize us without warning, unwished for and unexpected?

The senses, whose functions are suspended during sleep, are equally incapable of action at the near approach of death. The ideas also are clouded; we notice not surrounding objects, and a dark oblivion veils our faculties. Let devotion often present this meditation to our minds. Whenever we seek for repose upon the downy pillow, let us reflect upon the blessings of sleep, and look up with gratitude to Him, who, during our seclusion from toil and labour, watches over our slumbers, and preserves from danger our helpless condition. For, if a protecting hand did not shield us, to how many perils might we not be subjected during the night-season!

JANUARY X.

Of the Advantages of our Climate.

HAVE we a proper sense of the great happiness which we enjoy in so many respects? The blessings of our Heavenly Father are every-where poured out upon us. The view of ample forests, of the rising hills, and the extended meadows; the pure and temperate breezes we inhale, the seasons, with their accompanying variations and different attractions, all denote the unspeakable beneficence of God, and his wish for the happiness of man. How then can we ever complain of the hardness of our condition, accuse the Almighty of a partial distribution of his favours, or murmur because the summer declines, and the rays of the sun do not for ever beam upon our soil, nor an equal degree of warmth cheer the inhabitants of our zone? What ingratitude, and what ignorance! We know not what we desire, nor of what we complain. Seeing that God has peculiarly favoured our climate, is it through pride or inadvertency that we acknowledge not his goodness? We often repine at the rigours of winter, and envy those who know no vicissitude of season; but let us remember, that what we most dread, the keen air of winter, perhaps, renders our climate the most salubrious of any on the globe. Observe the languid, exhausted frame of the inhabitants beneath a cloudless sun, the diseases that prey upon them, and the indolence which they are of necessity obliged to endure. When even the cold in our climate is felt most severely, we may comfort ourselves that this, compared with the cold of more northerly countries, is no more than the temperature of autumn. How different is our lot from that of the shivering natives near the north pole! Here, even in winter, the friendly rays of the sun enliven the days, and incite universal gaiety. There, the day, dreary as the night, receives no light from the sun. Here, in perfect security, whether reposing in our beds, or indulging over the blazing hearth, we defy the rigours of the season; the charms of society soften its asperities, and the constant succession of day and night cheers and revives; but in those frozen regions, the miserable huts form a poor shelter from the pitiless pelting of the storm; and the wild savages of the woods and the deserts keep the starved inhabitants in a state of constant alarm and danger, by the loudness of their roar, and the frequency of their wild horrific cry; and with them a perpetual winter reigns. Whilst we, after a few stormy months, are visited by a season whose charms console us for all that we have suffered, and, amid the joy and harmony inspired by a vernal sun, we forget the name of winter. Let us then bless the beneficent hand which has assigned us so happy an inheritance; let us glorify God who has regulated our present allotment with so much wisdom and goodness; and let us joyfully render thanks unto Him who has fixed our abode in a climate, where, in each succeeding season, his bounty is displayed with magnificence, and diffused with abundance, throughout the creation.

JANUARY XI

Snow conduces to the Earth's Fertility.

REGARDING appearances only, we might be induced to say, that snow, so far from being useful to the earth, was, by its cold and moisture, of detriment to trees and plants. But the experience of centuries teaches us, that to preserve grain, plants, and vegetables, from the effects of cold, nature can give no better protection than by shielding them with snow, which, though seemingly cold, yet shelters the earth's surface from freezing winds, and preserves a due degree of heat for the preservation of seeds.

Thus God provides what is necessary for the support and nutriment of the works of his creation. Nature is always active, even when she appears in a state of perfect quiescence, and renders us real services at the time she appears most to deny them. Observe the providence of God exerted for our good in the roughest season, and preparing, without any assistance on our part, all the treasures of nature. With such proofs of Divine protection, who can doubt or mistrust?

The wonders that God performs in nature every winter, he also daily effects for the preservation of mankind. What at first often appears useless or prejudicial, ultimately contributes to our felicity; and often when we imagine that God has ceased to interest himself in our welfare, he is, perhaps, completing a part of his glorious scheme, impenetrable to our view, but which unfolding may be the means of delivering us from some impending calamity, or procure us some benefit beyond the flight of hope to aspire after. Snow, however, is not merely destined as a covering to the earth, it tends also to assist its fertility, by penetrating beneath the surface, and supplying a proper degree of moisture.

"As the rain cometh down, and the snow from heaven, and returneth not thither again, but watereth the earth, and maketh it bring forth and bud, that it may give seed to the sower, and bread to the eater: so shall my word be that goeth forth out of my mouth; it shall not return unto me void, but it shall accomplish that which I please, and it shall prosper in the thing whereunto I sent it."—Isaiah, lv. 10, 11.

We live in an age in which this prediction, through the mouth of the prophet, is accomplished in a remarkable manner. Whole provinces and kingdoms, which formerly, shrouded in the gloom of ignorance, of superstition, and of credulity, were oppressed by slavery, and deluded by the dreams of idolatry, in this glorious day of gospel dispensation, cheered by the blessed light from heaven, have emerged from darkness and obscurity, have aroused their slumbering faculties, and have embraced the great truths of Christianity. Over how many obdurate hearts has it triumphed! How many good works, how many blessed fruits of piety, has it brought to maturity! May the Divine grace be so poured into our hearts, that we may ever feel its quickening, saving influence!

JANUARY XII.

Contemplation of the Heavenly Bodies.

The heavens present to our view, in the night season, a scene of grandeur and sublimity, which forcibly impresses the attentive observer of nature. But how few are capable of receiving the great and noble ideas which the contemplation of the firmament calls forth in a philosophic mind! How few even observe it at all! This, I imagine, can only proceed from ignorance; for it is impossible to take an extensive range through nature, and view the majestic objects everywhere presented, without at once being led through nature up to nature's God, and feeling the power of the mind expand in our vast flight through the regions of space, till we are lost in admiration and rapture, and feel a celestial radiance illume our souls. Oh that every human being would partake of this Divine pleasure! that they would elevate their thoughts beyond the confines of earth, and ranging above the spheres, repose on heaven! It is enough merely to name those immense bodies, each in itself a world revolving in space, to fill the mind with awe and astonishment at the mighty power of the Creator.

In the centre of the planetary system, the Sun, more than a million times larger than our earth, and at the distance of 82 millions of miles, rolls his majestic orb, round which revolve seven planets with their attendant satellites, all deriving their lustre from the central luminary. These planets are known to the astronomers by the names of Saturn, Jupiter, Mars, Venus, the Earth, Mercury, and Herschel.* Of these the nearest to the sun is Mercury; it is much smaller than the earth, its diameter being only 2600 miles, and from its proximity to the sun, round which it performs its course in eighty-eight days, rolling at the rate of 95,000 miles an hour, is seldom visible to our eye: the light and heat it derives from the sun are nearly seven times as great as ours, being distant from that luminary only 32 millions of miles. Next comes Venus, completing her revolution round the sun in about seven months, at the computed distance of 59 millions of miles; she is larger than our earth, and shines when west of the sun as a morning star, and when east as an evening star, with astonishing splendour, moving hourly in her orbit 69,000 miles. The third circle is the orbit of the earth, revolving round the sun at the rate of 58,000 miles an hour, which, though little more than half as swift as the motion of Mercury in his orbit, is one hundred and twenty times swifter than that of a cannon-ball. The earth's diameter is 7970 miles, and the moon rolls round it as an attendant satellite, performing her course in 29 days, 12 hours and 44 minutes. The moon's diameter is 2180 miles, and her distance from the earth's centre 240,000. The planet next in order is Mars, about 125 millions of miles distant from the sun, and travelling round him in 636 days and 23 hours, at the rate of 47 millions of miles every hour. The diameter of Mars is 4444 miles, his quantity of light and heat equal but to half of our's, and the sun appears to him but half as large to us. The fifth, and the largest of all the planets, is Jupiter, distant from the sun 426 millions of miles, and going every hour in his orbit 25,000 miles. He finishes his annual period in 11 of our years, 314 days, and 12 hours. He is above one thousand times larger than our earth, and is surrounded by faint substances called belts; they vary considerably in appearance, and sometimes disappear altogether; hence they have been supposed to be clouds. Four moons revolve round the planet Jupiter, so that scarcely any part of his immense orb remains unenlightened, except the poles, whence only the farthest moons can be seen; but light is there least required, because the sun constantly circulates in or near the horizon, and may be kept in view of both poles by the refraction of Jupiter's atmosphere. Saturn is about 780 millions of miles distant from the sun, and travelling at the rate of 18,000 miles every hour, performs his annual circuit in 29 years, 167 days, and 5 hours, of our time. He is nearly six hundred times larger than our earth, his diameter being 67,000 miles; and he is rounded by a broad ring, round the outer circumference of which revolve five attendant moons.* The sun shines on one side Saturn's ring for nearly fifteen years without setting, and as long on the other in its turn. The last known planet in our system is Herschel, distant from the sun about 1565 millions of miles, and performing his annual circuit in 83 years, 140 days, and 8 hours, of our time, at the rate of 7,000 miles an hour. His diameter being 34,000 miles, he is about eighty times larger than our earth. Dr. Herschel has discovered six attendant moons, and supposes there may be more.

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* Discovered first at Bath, March 17, 1781, by the philosopher whose name it bears.

Such is the stupendous grandeur of the planetary system; yet the sun, with all his accompanying planets, forms but a very small part of the universe. Each star, which to us appears scarcely larger or more brilliant than the diamond, equals the sun in magnitude and in splendour, and is in itself a world, and the centre of a planetary system. That they shine with their own and not a borrowed light is demonstrable by their immense distance from the sun, which renders it impossible for them to be illumined by his rays: a cannon-ball shot off from the sun would not reach the nearest fixed star in 600,000 years; hence each may be considered as a sun: and he who imagines that such glorious luminaries were formed to shine with an ineffectual light, can have but a very contracted idea of the almighty power and wisdom. The number of stars in either hemisphere visible to the naked eye is not more than a thousand; with the assistance of a good telescope three thousand may be perceived, and, could better instruments be procured, there is every probability of thousands more existing; nay, some very profound philosophers have supposed there are stars at such inconceivable distances, that their light has not yet reached the earth since its creation, although the velocity with which light passes is a million times greater than that of a cannon-ball. Thus, though a man may measure the universe with his telescope, he can form only a very inadequate idea of its amazing extent.

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* Dr. Herschel has discovered two other moons belonging to Saturn, so that there are now seven moons attendant on that planet.

What a noble, what an august subject for meditation! Though the mind of man cannot yet bear to soar with the steady flight of the eagle through the boundless regions of space; though he cannot yet grasp within his span the sublime view of orb encircling orb, each in itself a luminary, multiplied without end, attended by millions of worlds, all revolving in matchless order, and harmonious regularity, each in his silent course, with varied motion; some whirling with a rapidity our senses cannot conceive, others less distant performing their circles with less velocity; and all these worlds containing myriads of intelligent beings in different states of felicity and perfectibility.

If then the utmost stretch of the human faculties, the utmost vigour of our reason, cannot comprehend the totality of these works, nor our imagination expand even beyond our own system, how can we pretend to scan that Almighty Being, at whose word order arose out of confusion, chaos was converted into elements, and the starry spheres began to move through the heavens?*

JANUARY XIII.

Discoveries which have been made by the Microscope.

THE wonders of nature are displayed in the minutest as well as in the largest objects; whether we consider the structure of the mite, or that of the towering elephant, we shall find her alike excellent; she has formed them both with the same degree of propriety of construction. It is our senses which are not sufficiently acute to perceive the organization of very small bodies, which often escape our observation, unless we have recourse to foreign assistance. The microscope has opened to us a new world of insects and vegetables; it has shown us, that objects, invisible to the naked eye, exist, having figure, extension, and different parts; some examples of which we shall produce, that we may have more causes to admire and praise the wisdom and power of God. Every grain of sand when examined by the naked eye appears round, but with the help of a glass we observe each grain differs from the other, both in size and in figure: some of them are perfectly round, others square, some conical, and the major part of an irregular form. What is still more astonishing, by microscopes, which magnify objects millións of times more than their natural size, we can discover, in the grains of sand, a new animal world; for within their cavities dwell various insects. In cheese are found innumerable animalculæ, called mites, which to the naked eye appear but as points, whilst seen through a microscope they are found to be insects of a very singular form and structure; they have not only a mouth, eyes, and feet, but their transparent body is covered with long hair, sharp, and formed like needles.* In the vegetable kingdom we are presented with a thick forest of trees and plants, bearing leaves, branches, flowers, and fruits; the rudiments of all which beautiful objects were once hidden beneath the mould: little as we should have expected to find these in such a bed, as little should we have supposed the dust upon the wings of a butterfly to be minute feathers, or the bloom of a peach to be a collection of insects, had not the microscope furnished us with this intelligence.

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* As the above account differs from the original more than even a liberal translation will authorise, it is right to state, that considerable errors were found, and had been continued by the preceding translators; to correct which, in the present edition, the works of Newton, of Ferguson, and of Euler, have been consulted.—E.

Thus we see the power of God is great in those things which ignorance makes us regard as minute; for however small the minutest animalcule appears to us, we have reason to believe there are objects which appear to it as small as it does to us. By the view which we have just been taking, we shall also find the subjects of nature to be much more numerous than we had imagined. Though we are acquainted with many thousand species of plants and insects, how many more are there yet hidden from our researches! If we could explore the vast abyss of the sea, or search the bottom of rivers, penetrate within the numerous forests, at present the haunt of savages and reptiles, what additions should we not make to our present limited collection, and find new causes to admire the wonderful works of God!

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* The view of a frog through a solar microscope is strikingly beautiful; from the transparency of its skin, the blood is seen to circulate in the vessels in a manner indescribably wonderful and brilliant. The physiologist is likewise indebted to the microscope for his more intimate knowledge of the red particles of the blood; but, owing to a difference of glasses, or some imperfection in the optic nerve, there is yet a dispute whether they are perfectly globular, or circular as to circumference with a plane superficies, in the manner of a flat shilling.—E.

JANUARY XIV.

Advantages of Night.

When the sun has withdrawn his friendly light from us, and darkness has obscured the face of nature, we are doubtless deprived of some pleasures. Nevertheless we have no cause to complain of this arrangement. As the mixture of pleasure and pain, the alternation of good and evil, are wisely ordered; so also we must acknowledge the wisdom and goodness of God in the remarkable variation which is observed in our climate: and we must allow that the seeming inconveniences of the winter nights are compensated by a thousand advantages. Without any occasional privation of sun-shine, should we be so well convinced of its great comfort and utility?

Let each returning night recall to our minds the goodness of God, who, for the benefit of mankind, has diffused light and beauty over the face of the earth; let us reflect upon our miserable condition, if each succeeding morn did not ensure the continuance of light. Is not darkness itself, at certain intervals, pleasing, by inviting us to repose and tranquillity under the sweet influence of sleep? How many labourers consume their days and exhaust their strength in toiling for our service, whose work is often attended with disagreeable and painful sensations; to these night is welcome, and they hail the approaching evening with joy, when, free from the unrelenting frowns of a hard master, or the cries of their feeble and helpless children, they may sink down to rest, and enjoy a sweet oblivion of their cares.

When night has spread her sable mantle over the earth, all the little bubbles which so agitate man during the day cease to disturb him ; all his emotions of envy, of jealousy, of pride, and of malignity, yield to the drowsy influence; all his sorrows, his doubts, and his perplexities, for a time, are suspended: stretched on his couch, he only wishes for sleep ; his eyelids once safely sealed, the monarch, encanopied with purple, is no more than the beggar nestling in his straw.

What then do we not owe to the Supreme Being who thus has provided for the good of his creatures ; who has appointed a time when the weary shall rest, and the oppressed shall be relieved; when millions of human beings, condemned by necessity to drag on a wretched existence, employed in hard tasks and painful toils, or who groan beneath the yoke of slavery, have their allotted hour of ease and freedom ; when their cares and their sorrows may sink into soft repose ; when the weary traveller shall lie down, and the exhausted peasant gain new vigour and recruited force ; and when the philosopher shall be obliged to cease from the intense thinking which would destroy his powers, that he may rise and pursue his investigations with redoubled energy ?

JANUARY XV.

Reflections upon Self.

It is reasonable that every man should sometimes withdraw his attention from foreign objects, and fix it upon himself. By continually thinking of the things which surround us, we are apt to lose sight of ourselves, and forget the gratitude which the contemplation of the starry heavens, and the enjoyment of the blessings showered down upon the earth, ought to excite in our bosoms. To be convinced that man is as excellent an example of the perfection of God's divine power and wisdom, as are those objects which by their grandeur astonish the faculties, I wish that every individual would deeply reflect upon all that most intimately concerns his structure. How admirable is the union of the body and the soul! How incomprehensible their action! We daily experience that when the rays of light, reflected from external objects, strike upon the retina, the mind receives an idea of the size, figure, and colour of such objects. We find certain vibratory undulations of the atmospherical air convey to the mind, through the medium of the ear, an idea of sound. By this power of perception we obtain the knowledge of all the changes which occur in surrounding bodies, as well as an acquaintance with the thoughts of other men. We find whenever a desire for motion from place to place arises in our minds, the body obeys the impulse; and whether the trunk, the head, or the limbs are required to move, obedience follows the will. These are facts well known and daily experienced, but it is beyond the power of man to explain them.

In this reciprocal influence of the soul upon the body, and the body upon the soul, there is a wisdom displayed which we cannot search into, and the result of our profoundest Investigations into this exquisite union of body and soul must be admiration and astonishment.

If we consider the body separately, we find it displays every-where the power of the creating Hand; each limb is ordered in the most convenient manner for utility as well as beauty; no change that man can devise will be of benefit to him, so admirably is the human frame organised—so wisely is it constituted. Its internal arrangement is still more wonderful. The body has different ends to answer, different functions to perform; it is the medium through which the soul receives cognisance of external objects. For this great purpose we find it furnished with the organs of sight, of hearing, of taste, of feeling, and of smell, each in itself worthy the highest admiration. But to enable the body to transmit to the soul the sensations of external objects, it is necessary motion should be readily performed, for which purpose we find various parts provided by nature: the bones, muscles, joints, ligaments, and cellular substance, all exquisitely arranged, give the power of moving in every direction: but a machine like this, in frequent motion, must be liable to a continual waste; to supply which loss, and keep it in proper order, it will be necessary to receive aliment, to communicate it, to separate its nutritious juices, to circulate them through the whole machine with such proportion and regularity that each part may receive the quantity necessary for its due support; for all which purposes suitable functions are provided.

We have reason then to praise the Lord, who has thus wonderfully formed us, all of whose works are so admirable. To thee, O God! be rendered all adoration and thanksgiving. Let us celebrate thy praises with the sound of the harp, and with the song of joy and of gladness. We are the prodigies of thy power; all our faculties and our senses display the Divine wisdom. May we ever be permitted to glorify and exalt thy holy name: and may we, when time here shall be to us no more, rejoice in thy goodness, through a blessed eternity!

JANUARY XVI.

The Damage occasioned by extraordinary Cold.

Why do we so readily notice those effects of nature which seem to be injurious? Why do we so willingly dwell upon and even murmur at them, whilst we slightly pass over all the striking advantages which they procure us? Men in such cases act toward God as they are accustomed to do with their fellow-creatures. A trifling offence, a slight injury they may have received from their best friend or benefactor, often effaces from their memory the essential benefits they have received; their pride and their ingratitude cause them to overlook the benefits, while they magnify the injury. At this season of the year we have a memorable instance of their disposition: men seem only to regard the evil which may result from the cold, and never consider the good it may produce. If they discover the least injury, if some parts of the great whole suffer, they think themselves authorised to murmur against God, without at all considering that nature, taken as a whole, deduces great advantages from the cold. If we weigh with impartiality the advantages and the evils which may be attributed to it, the result will convince us how little cause we have to arraign the government of the Almighty.

It is true a severe season causes many inconveniences, and induces some distressing consequences. Sometimes the water is frozen to such a depth that it is not possible to obtain a supply of this necessary article; the fish die in the ponds; rivers swelling above their banks, their torrents increased by the melting snows, and containing vast masses of floating ice, burst their boundaries and devastate the neighbouring country. The working of water-mills is stopped; vegetables suffer; wood and fuel entirely fail, or become excessively enhanced in price; grain, potatoes, &c. if not well covered, are spoiled, and plants and trees die. Many animals perish from cold or hunger, and the health and safety of man is often endangered.

These are some of the most striking evils which the rigour of a severe season may produce; but how many winters do we not pass without witnessing such a degree of extreme severity? Admitting, however, that these disastrous effects oftener occurred, what right have we to complain, when the advantages much more than compensate for any evils we may endure? Knowing so little of the great chain of causes which links together this world, how are we poor finite beings to pronounce and to decide upon what is best for nature, or upon what is most prejudicial to her? Let us not then expose our ignorance and absurdity by blaming or condemning the laws of nature, because we see but a very minute part, and are totally incapable of grasping the whole. Let us rather acknowledge our incapacity, and acquire a confidence in the ways of Providence which shall induce us to believe and to feel assured, that He who has created the heavens and the earth, has likewise ordained a portion of happiness and of good sufficient for our present condition, and far exceeding all the accumulated evils we can possibly endure. With this reliance upon the rock of ages, we shall remain firm and unmoved, amid the warring of elements and the general wreck of nature; whilst we ascribe praise, honour, and thanksgiving to our wise and beneficent Creator.

JANUARY XVII.

Nature reposes during the Winter.

The days of winter are the days of Nature's rest. In the preceding months she has been exhausted with incessant labour for the good of man. How rich has the spring been in flowers; how the seeds have expanded and the foliage sprouted! What abundance of fruits the summer prepares for the autumn's maturing hand! Every month, every day we receive some fresh gift from nature. As the tender mother provides for her young with anxious care, so nature is busied from morn to evening in supplying our wants, and in procuring us a succession of comforts and blessings to make life's fleeting moments smile with joy and with delight. Food, raiment, and the chief sources of our pleasures, are all derived from her fostering bosom. For us she makes the seeds to open and expand, the herbs to bud, the trees to look gay with foliage, beautiful with blossoms, and to pour forth their riches in fruit of every kind that can please the eye or gratify the taste. For us, the golden grain waves over the fields, the vine offers her varied treasures, and the whole creation is clothed in verdure, and presents to the delighted observer an infinitely varied and beautiful field of attractions. Wearied by so many labours, Nature, for a space, reposes, in order to acquire new force, that she may again be equally fruitful, and again be enabled to assume her wonted resplendency.

Here also, O beneficent Creator! I adore thy wisdom. The repose of nature in winter is not less interesting to us, nor less worthy of entering into the plan of thy Divine Providence, than her utmost activity in spring and summer. Thou hast prepared the different revolutions of the earth; thou hast established the most intimate relation between them; and with an impartial hand hast distributed labour and rest. It is Thou who hast willed that each sun should vary the seasons of nature, in such times and ways as are most fit for the perfection of the whole. If I have ever been foolish enough to blame any thing in the government of the world, O God! pardon my temerity. I now see, and am fully persuaded, that all the arrangements of thy Providence, however extraordinary they may appear to my feeble intellects, are full of wisdom and goodness. Now, that I see the earth mantled with a deep snow, I think of the good which will result from it, and bless the wisdom of God; for I now know that unless nature, at certain intervals, enjoyed a state of rest, we should no longer see the flowers and the fruits which so beautify the creation and increase the comforts of life; no more would the joyful harvest-home gladden the swain, nor the fields exchange their dusky hue for the sprightly green.

There is a time also, when the labours, the cares, and the vexations of man shall cease, when his sorrows shall be no more. In the spring and summer of life, the greatest activity and exertions are necessary to secure a comfortable existence for ourselves, and to contribute all in our power to the good of our fellow-creatures. The autumn will soon arrive; and may we resemble the luxuriant trees which shed into our lap their ripe and mature fruits! May we be enabled from our own fulness to give to others a portion of our treasures, and make the rich stores of our minds flow into those who have not had equal opportunities of acquiring knowledge! so that in the winter of our age, when the measure of our days shall be filled, and our head silvered o'er with time, it may be said, as we pass along, see that venerable man, who has devoted his youth to the benefit of mankind, whose days have been passed in the continued exertion of his faculties, and in the constant pursuit of active good, he is hastening to receive the reward of his good actions in the eternal kingdom of peace, of joy, and of felicity!

JANUARY XVIII.

Of the Laplanders.

It is my desire to begin this meditation with a lively sense of gratitude to my Creator, and of compassion for those of my fellow-creatures to whom nature has been less bountiful in her gifts. I shall confine my attention in this day's reflection to the Laplanders, and to the natives of those countries which border upon the arctic circle; a race of people whose lot, compared with ours, seems to be much less happy. Their country is almost entirely formed of mountains, perpetually capped with snow and ice, the continued chain of which is only interrupted by vast marshes. Winter reigns during the greatest part of the year; the nights are long, and the days have but a feeble light. According to the season, the inhabitants live in houses or in tents. In winter they seek shelter from the cold in their houses, which have neither door nor chimney; the fire is in the centre, and the smoke escapes through a vaulted aperture in front, by which they enter into the house, being from the lowness of the passage obliged to creep upon their hands and feet; the roof of the house is covered with furs, and the walls within are lined with the same materials; they also sleep and sit down upon the skins of animals. During six months of the year they are enveloped in the shades of night, and, confined to their houses, hear nothing around them but the whistling of the wind, the roaring of the tempest, and the fierce howling of the wolves, driven by hunger to prowl for their prey, near the habitations of man.

How thankful ought we to be that we do not live in such a climate, where, far as the eye can reach, extends one vast chain of icy mountains and immense deserts, covered with snow! where the cold is intense, the habitations miserable, and no means of subsistence, but such as are offered by the dangerous and toilsome chase, can be obtained! where we should be deprived of all the pleasures and comforts procured by the arts, and all the charms and blessings of a cultivated society! Let us then feel and know the value of our own climate, and glorify God, who has made our condition so much superior, and distinguished us with such numerous advantages. Yet the hardy inhabitant of these northern regions is not the unfortunate being we may suppose. It is true that he wanders exposed to every inclemency of sky, through a dreary and rugged country; that he is poor, and deprived of many of life's choicest blessings; and that for months together he is never cheered by the sun-beams. But his frame is strong and capable of enduring much fatigue, his wants are few, education and habit inure him to the rigours of the clime, and the gloom of his long nights is rendered supportable by the moon and frequent glimmering of the aurora-borealis. The Laplander is extremely agile, and glides over the snow, upon skates, with a velocity which frequently outstrips the fleet deer: in these expeditions, a stranger to fear, he will scale the hills or fly down the precipice. The rein-deer is subservient to his use, and yoked to the sledge this swift animal will draw him over immense tracts of country; and when worn out with age or fatigue his skin supplies clothing and furniture.

In the beginning of the spring, when the melting snow penetrates their humble roofs, these people quit their houses to pass the summer in tents, which they find more convenient for their mode of living; these they make as comfortable as possible, and smile at the accounts of travellers who attempt to persuade them it is possible to enjoy greater happiness than they experience in what we call their miserable situation. They are hospitable, and lovers of peace; but prone to revenge, and extremely superstitious: they have their feasts and their entertainments, with different diversions; and were the rays of knowledge and of a pure religion ever to irradiate their minds; their idle dreams of witches, of spirits, and of hobgoblins; their belief in magic and in charms; to be dissipated by the torch of truth, they might, indeed, since happiness is not confined to any particular country, be a happy and an independent race of men.

JANUARY XIX.

Wisdom displayed in the Structure of the Globe.

HOWEVER limited the human capacity may be, and confined the understanding; and though we are unable to comprehend the great plan of the universe, we may yet, through the medium of our senses, and by the exertion of those faculties which we all enjoy, discover enough to know and to admire the wisdom of God. To be convinced of this we have only to consider the figure of the earth, which we shall find to be that of a sphere, a form the best adapted for its surface to be every-where inhabited by living creatures. This end could not have been accomplished if the inhabitants of the earth did not experience a sufficient degree of light and heat; if water could not, in every part, circulate without impediment; and if the winds were not suffered to blow unretarded by obstacles. For all these purposes the rotundity of the earth is admirably adapted; it is owing to this that the light and heat are so readily diffused throughout the globe. Were it not for this form, the succession of night and day, the different changes of the temperature of the air, of cold, of heat, of moisture, and of dryness, could not have occurred.

If we consider the immense body of the earth and its excellent degree of consistence, neither too hard nor too soft, we have still more cause to admire the Supreme Wisdom. Was it more hard, more compact, and less penetrable, it would be incapable of being converted to the purposes of agriculture, and we should not enjoy the plants, the herbs, the roots, and the flowers which now beautify its surface, and are nourished within its fostering bosom. The earth is formed of different strata, consisting of fossils, bituminous and calcareous matters, metals, and minerals; the water which we drink and convert to so many useful purposes is rendered limpid by filtrating through beds of sand at a great depth within the earth; the mountains and the valleys, the plains and the hills, which diversify its surface, whilst they contribute by their beauty to the pleasure of man, promote his health as well as the salubrity of the various species of plants and animals which exist in every situation of the earth.

Who is there that will not acknowledge that the whole plan of the earth, its form, its exterior and interior structure, are all regulated by the wisest laws, and all tending to promote and to increase the happiness of animated beings? Wherever we direct our attention, whether to examine the beautiful and grand objects diffused over the face of nature, or whether to penetrate within the interior of the earth, we perceive that every thing is arranged with wisdom, and we every-where discover the legible characters and broad stamp of an Infinite, Almighty, and Supreme Being.

JANUARY XX.

Short Meditations upon the Works of God, taken from the Scriptures.

"Hearken unto this, stand still, and consider the wonderful works of God."*

"Jehovah hath formed the earth by his power: he hath established the world by his wisdom, and hath stretched out the heavens by his understanding."†

"And God said, Let there be light, and there was light; and God saw the light that it was good; and God separated the light from the darkness, and he called the light day, and the darkness he called night."‡

"Thou art the Lord who hast made the heavens and the heaven of heavens, with all their hosts; the earth, and all things therein; the seas and all that is therein: thou givest life to all things, and the hosts of heaven worship thee."§

"O Lord, my God! thou art marvelously great, thou art clothed with honour and majesty! Who coverest thyself with light as with a garment; who stretcheth out the heavens as a curtain. The Lord layeth the beams of his chambers in the waters, he maketh the clouds his chariot; he walketh upon the wings of the wind; he maketh the winds his messengers, and the lightnings his agents. He hath laid the foundations of the earth so that they cannot be shaken. He hath covered it with the deep as with a garment; the waters stood above the mountains, but at his rebuke they fled; at the voice of his thunder they hasted away.‖

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* Job, xxxvii. 14.
† Jer. x. 12.
‡ Gen. i. 3, 4, 5.
§ Neh. ix. 6.
‖ Psalm, civ. 1, 7.

" He hath stretched out the heavens over the chaos, and hath hung the earth upon nothing. He bindeth up the waters in his thick clouds, and the cloud is not rent under them. His power raiseth the waves of the sea, and his wisdom restraineth their fury.* He raiseth the vapours, and assembleth them in clouds, which pour down in rain upon the face of the earth. He covereth the heavens with dark clouds, and the thunder-bolts issue from his tabernacle. He darts his lightnings through the thick clouds, where all the waters of the sea seem to be collected. Thence, as from his throne, he pronounceth judgment upon the nations, or scattereth abundance over the face of the earth.†.

" The thunder peals, and we see the lightnings flash; God announceth his wonders, and performeth things too marvellous for our comprehension. He sayeth unto the rain of winter, Fall down upon the earth; and it inundates the countries.. Out of the south cometh the whirlwind, and cold out of the north. By the breath of God ice is produced, and the waters which were spread on all sides are held in chains. He causeth the most clear and serene sky to succeed to that which was most obscured; and his light dispels the clouds.‡ He who holds the reins of the world collects these meteors, that they may fulfil the task which he hath appointed them on the face of the earth; whether he intends that they should punish men, or manifest the effects of his bounty.

" God is wise in heart, and mighty in strength: who hath opposed him and hath prospered? He snatcheth up the mountains, and overturneth them with the breath of his nostrils. He shaketh the earth out of her place, and the pillars thereof tremble.

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* Job, xxvi. 7, 8, 12.

† Job, xxxvi. 27, &c.

‡ Job, xxxvii. 5, &c.

He commandeth the sun, and it riseth not; and he sealeth up the stars. He spreadeth out the heavens alone, and walketh upon the waves of the sea. He hath formed the constellations Arcturus, Orion, and Pleiades, and the chambers of the south."*

"Thou hast opened the fountain and the torrent: thou hast dried up the mighty rivers. The day is thine; the night also is thine: thou hast prepared the light and the sun. Thou hast set all the borders of the earth; thou hast made summer and winter.† He raiseth up the east wind in the air, and sendeth forth the south wind by his power.‡

"He watereth the mountains from his chambers; the earth is satisfied with the fruit of his works. He causeth the grass to grow for the cattle, and grain for the service of man, that he may bring forth food out of the earth.§ For thus saith the Lord that created the heaven: God himself that formed the earth and made it, and hath established it, created it not in vain; he formed it to be inhabited. I am the Lord, and there is none else."‖

JANUARY XXI.

Of the Human Voice.

The human voice, both in its principles, it variations, and its organs, is certainly most admirable, and its nature difficult to be explained. Let us first consider the organs by which we are enabled to emit sounds. The air is received into the lungs through a tube called the trachea or windpipe; this is chiefly formed of cartilages nearly circular, united by an elastic membrane. The entrance from the mouth is singularly formed, so as to admit the passage of air into and from the lungs; but as the smallest particle of food getting into the trachea would be productive of the worst consequences, a valve is placed over the mouth of the tube, which is shut whilst we eat or drink, and only opens to admit the passage of air.* The air being then expelled through this tube into the larynx with a certain degree of force, and thence into the mouth, occasions the voice, which is formed when the air is quickly expelled through the contracted glottis into the larynx, from which the sound arises. The particular formation, and the different degrees of contraction and motion of the larynx, glottis, &c. and the manner in which the air is expelled through their parts, principally conduce to occasion the great variety of sounds and difference of voice we meet with.+

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* Job, ix. 4, 9.

† Psalm, lxxiv. 15, 16, 17.

‡ Psalm, lxxviii. 26.

§ Psalm, civ. 13, 14.

‖ Isaiah, xlv. 18.

Speech consists in the pronunciation of letters, which are of two kinds: those which are pronounced without the tongue moving against any part of the mouth are called vowels; those which require collision of the tongue with some other part of the mouth, lips, and teeth, are consonants. The communication between the nostrils and the mouth much facilitates our pronunciation; hence when this channel is obstructed we experience a great change of voice.

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* This valve is called the epiglottis, and the orifice over which it is placed, the glottis; there are, besides, cartilages called thyroid, two arytænoid, and the crycoid, all together constituting the larynx, which is the part most essential to the voice.—E.

+ The author divides the trachea into twelve equal parts, which he says produce the twelve full tones that he asserts the human voice is possessed of; these he subdivides into one hundred more, and hence sets down that a man may produce 2400 different tones of voice, which may all be distinguished by the ear. To say nothing of the very little we yet know respecting the tones of the human voice; which however, we have reason to believe, if accurately investigated, would be found to be very few, though susceptible of infinite variation; I have only to observe, that so far from the trachea producing these tones, it may be divided, or wounded, without the voice suffering, whilst the slightest injury done to the larynx will materially affect the voice.—E.

Having thus generally considered the parts necessary to the formation of the voice, let us reflect a little upon its beauties and advantages. By the means of the voice we have been enabled to become a civilised people, and have obtained all the blessings peculiar to that state. We find when it pleased God to confound the impious builders of Babel, he had only to render their language unintelligible to each other, and the work could not proceed. Consider it in all its consequences with regard to society, and it will be found that, without the means of rendering ourselves understood by our companions, social intercourse must cease. Besides, there is something so fascinating in some of the modulations of the voice that they penetrate our souls, and we acknowledge their influence from the bottom of our heart. A pleasing and soft voice, tuned to the language it utters, is irresistible; and we often, from the tone of the voice, judge of the temper of the mind. Let us then, since experience teaches us this pleasing gift may be improved by attention, spare no pains in its cultivation, and offer up our thanks to the Almighty for bestowing upon us a treasure without which life would not be desirable; a treasure which by our own exertions we can make still more estimable: and may we never be found amongst the number of those who misapply this heavenly gift, but ever convert it to the benefit and pleasure of our fellow-creatures!

JANUARY XXII.

Necessity of reflecting upon God.

I address myself to those who seek with laudable solicitude to derive edification from every occurrence. I wish to induce you, by regarding the different changes of nature at this season, to be led to reflect upon the wonders of God, whose glory shines now equally manifest as at every other time. Whilst you behold the earth covered with snow, rivers arrested in their course by the frost, the trees stripped of their foliage, and all nature wild and desolate, think of the reasons which alone can influence Providence in this change, which you will find to be for the benefit of the whole creation. If, from the contraction of your mind, the narrow limits of your faculties, you can scarcely comprehend the smallest part of the designs of God, let it satisfy you to know that the snow, the ice, and all the phenomena which winter presents, are comprehended within the plan of the Supreme Wisdom for the well-being of created nature.

You can no-where cast your view, but objects present themselves to call forth your piety; when you see the snow melt, the ice dissolve, and day after day glide with rapidity, you may reflect upon the short and uncertain span of life. If all the comforts which ease and affluence can impart are within your possession, think of those unfortunate people who, destitute of the common necessaries of life, are sinking beneath the rigours of the season, and whom you are loudly called upon to assist with a portion of your superfluities. But, above all, cultivate your mind; supply it with those rich materials of knowledge which no earthly power can bereave you of; and whilst you thus enlarge your mind, keep alive all the feelings of your heart, let it ever pulsate to the happiness of your fellow-creatures, and never fly but from the misery you cannot relieve. You will then be able to regulate your passions, to disregard sensuality, and rise superior to all trifling and sordid emotions. You will never have occasion to fly to dissipation to enable you to pass the tedious length of the day; whilst others are indulging in debauch, and in sinful pleasures, you will, from the workings of your mind, and from the contemplation of the works of God, whether you are in the privacy of retirement or in the company of those whom you love and esteem, find pleasures the most exquisite, because they are pure and unalloyed, and permanent, because they are furnished by the mind, which lives for ever. Whatever tends to abstract our thoughts from the petty occurrences of terrestrial objects, and fix them upon God and the effects of his wisdom, advances the dignity of our nature, renders our minds noble and elevated, and diffuses over the soul a sensation of that felicity which we have reason to believe is the portion of the angels of light; and the continuance of which, according to our several degrees of merit, we may hope to experience in the blessed regions of eternal purity and truth.

JANUARY XXIII.

The Fear of Apparitions.

During the long dark nights of winter many people are troubled with a ridiculous fear af apparitions. At the period when the natural imbecility of man was more a prey to superstition than it is in this [illegible] enlightened age, such idle fears were less reprehensible, because they were imbibed in childhood, and communicated through the impressive medium of religion. But that such notions should still disgrace an intellectual people is remarkable. It shows how ready the invention of man is to be employed in conjuring up monsters, and in tormenting himself: as if there were not already enough of real evils to afflict him, he creates imaginary ones, and becomes wretched because he thinks he is so. How wretched is the miser through his fear of thieves; the misanthrope, from his doubt and mistrust of all who surround him; and the discontented man, from dissatisfaction with his condition, and anxiety for the future! Hence let us learn to guard against the illusions of the imagination, which not only during the night presents spectres to our view, but also, in the day-time, often deceives us by painting vice in alluring forms and attracting colours. Happy should we be if we were as eager to fly from the temptations to evil as we are from the imaginary terrors of an apparition.

Whence is it that some people, whose courage in real danger never shrinks, are violently affected by these chimeras? It is because their imagination clothes its objects in colours much more glowing than they really possess, and in this case, being perverted before reason can operate, terror has completely possessed the mind. Admitting the existence of spectres, why should the return of one from the dead so horribly shake our nature, when we live in the certainty of being one day transported into a world of incorporeal beings? Though we are convinced that every moment brings us nearer to the presence of the eternal God, we feel no fear from such a conviction; yet were an apparition at midnight to interrupt our repose, and announce the decree that we must soon follow it to an unknown country, the boldest amongst us would feel an emotion of terror, and await the event with the utmost torture of suspense. Yet we regard not the voice of the Most High, which cries, "Prepare, O Israel, to meet thy God!" Let us not give up our minds to unnecessary alarms, but rather fear that Being at whose coming the hearts of the bravest would be appalled, and the wicked shall call upon the mountains to hide and the hills to cover them. Fear to do that which is contrary to the will of God, and you may banish every other fear, and sing with David, "The Lord is my light, whom shall I fear? The Lord is the strength of my soul, of whom shall I be afraid?"

JANUARY XXIV.

Subterraneous Fires.

THERE are certain phenomena occasionally observed which strongly prove the existence of subterranean fires. Terrible eruptions of inflammable matter, from time to time, take place. The two most known and most considerable mountains which produce these effects are, Etna in Sicily, and Vesuvius in the kingdom of Naples. The accounts given of these two volcanoes are very terrible. At different intervals vast eruptions of fiery matter issue. Sometimes only a black vapour is seen to arise, and at the same time are heard hollow rumbling noises, often succeeded by strong flashes of fire, and peals like thunder, accompanied with the sensation of an earthquake. The vapour then becomes luminous, and showers of stones and lava are evolved, part of which falls again within the crater, though enough of them fall without to lay waste the neighbouring country, and they are often whirled to a considerable distance. These terrible explosions are sometimes even more violent. With the noise of thunder, torrents of burning sulphur, and liquid metals, enveloped with clouds of ashes and smoke, are hurled to an immense distance; rocks, upborne by the force of the explosion, fall with a dreadful crash; and cataracts of fire pour down the steep of the mountain; the deluge sweeps over villages, plantations, and cities; the earth rocks, and they who escape the flood fall within the gulph made by the earthquake, or, tossed from wave to wave, are buried in the general wreck.

JANUARY XXV.

Of Comets.

THAT remarkable star which derives its name from the vapour which surrounds it, may justly be ranked amongst the heavenly bodies which form a part of our system. Like our planets, it has its revolution round the sun; but it differs from them all, by its peculiar motion, orbit, and figure. Seen through a telescope, a comet appears full of spots and inequalities; but a thick vapour frequently renders it impossible to observe its figure. The number of comets in our system is about twenty-one, moving in different directions, varying in size, and of much greater density than our earth. Their figure is not always round, and they are not always equally luminous. The train, or tail, is so transparent, that the fixed stars may be seen through it, and sometimes it extends to an immense distance in the heavens; the farther it reaches, the broader it seems to become, and is at times divided into rays. When nearest the sun, the heat of a particular comet has been computed by Newton to be two thousand times hotter than red-hot iron, and it would retain this heat until it came round again, though the period should be more than 20,000 years.

What we have just advanced on this subject is the result of observations made by astronomers. But there are many things concerning the heavenly bodies which we can never understand; and many of them are entirely removed from our sight. Is a comet an aqueous planet, or a burning globe? Can it be inhabited, when at one time it is placed so near the sun that the heat must be excessive, and at other times passing far beyond the orbits of other planets, it is immersed in utter darkness, where the sun's rays have no influence? Has the Great Judge of the ear[illegible] destined comets for the abode of the unrighteous [illegible] the chastisement of the wicked? Shall these bodies one day become the [illegible] of turning the planets from their orbits, and [illegible] their [illegible]tion? Or, are they [illegible] [illegible] and void, as was the earth before the Creator [illegible] habitable and fruitful? These questions cannot be resolved by natural wisdom; and from our incapacity in this respect we may learn humility, and be convinced how very limited are the powers of the human understanding.

Men too frequently neglect this truth. Were it present to their hearts, the appearance of a comet would not raise in their minds so many vain conjectures and fruitless opinions. Some men regard comets as the precursors of Heaven's judgments; and some read in their aspect the destiny of nations and the fall of empires. Others again predict, from their appearance, wars, famine, and plagues; and consider them as the severest scourge of man. These superstitious people never reflect that a comet is a natural body which does not derange the order of the universe, and the return of which may be calculated with certainty; neither do they consider that this body, as well as the other planets, must have a much more important destination than that which superstition allows them. Are we to be told that the Supreme Almighty Wisdom has placed these immense and magnificent luminaries in the firmament, to announce to a few poor creatures the fate which awaits them?

JANUARY XXVI.

Of Snow.

ALTHOUGH snow is very familiar to every one at [illegible] season of the year, its formation is sufficiently [illegible]esting to delight a mind fond of reflection. [illegible] consists of watery particles frozen in the air: [illegible] d snow only differs from [illegible], that the water which constitutes [illegible] been frozen when in its ordinary density, [illegible] the [illegible] which forms snow has been frozen when its particles were separated and reduced to a state of vapour [illegible]t has been proved by experiments that snow, at the first instant of its falling, is about twenty-four times more rare than water, and occupies ten or twelve times the space it does when dissolved.

The formation of the flakes of snow is both curious and beautiful; and were it not so familiar an object, would certainly fill us with astonishment. Let us, each time we see the thick flakes descend from the heavens, think of the benevolent Creator of nature, "which loveth all his works; which scattereth his snow like wool, and his hoar-frost like the shining pearls; which commandeth the cold to bless and to fertilise the earth, and to whom be rendered, for ever and ever, all praise, honour, and glory."

JANUARY XXVII.

Rapidity with which Life passes away.

That life is transitory, and the thread of existence very fragile, we have ample experience from the earliest glimmerings of reason: every thing around us serves to evince the uncertainty of time. Let us consider how rapidly the days have fled and the years have elapsed, and how imperceptible has been their flight! If we attempt to recall them to our memory, to follow their rapid course, we shall find ourselves unequal to the task, and unable to mark the different epochs, unless they have been memorable for some remarkable incidents, which have made a forcible impression upon our minds. How many years of infancy, devoted to the diversions of that tender age, have fled unheeded, and left not a trace behind! How often during the giddy thoughtlessness of youth, when beguiled by passions, and pursuing wild pleasures, we had neither opportunity nor desire for reflection!

When succeeding years have rendered a change of habit necessary, some have thought that they would act more as became rational beings; but the cares of the world occupied their attention, and so possessed their souls, as to prevent their reflecting upon the manner in which their hours had been passed. Their family increase, and cares and efforts to provide for their necessities likewise accumulate. Old age insensibly approaches, and perhaps there will then be an equal inability and want of leisure to reflect upon the present, or to remember what they have done, and what they have neglected to do; thus they never know the great end which were designed to answer in the creation.

Let no one defer reflecting upon this state till old age; for he never can be certain of attaining to it. So delicate is the tree of life, that with difficulty it advances to maturity; often nipped in the bud, it perishes before its petals have expanded; even shoots of vigour, which promised to flourish with strength, and with beauty, have their sap withered, and die. To leave the language of metaphor, how many a noble youth, formed in nature's fairest mould, just as his virtues are beginning to open, and his mind to beam, bows beneath the pale messenger! How many of the softer sex, with charms sweet as the opening morn, whose attractive graces entwine the heart, live but to show the beauty of nature, and then, as if too refined for this sphere, wing their flight to purer regions! If we are permitted to pass the period of youth safe from the dangers which threaten, we are still uncertain as to the continuance of an other hour. Let this reflection then induce us ever to live as if the present day was to be the last of our existence, and we shall then pass the time in employment suited to the nature of intelligent and rational beings.

JANUARY XXVIII.

Hoar-frost observed on the Glass of Windows.

In this little phenomenon we may observe with how much simplicity, variety, and order, Nature arranges her least productions. Though we frequently admire the extraordinary figures which the frost on glass presents to us, we seldom consider them with much attention. This phenomenon is occasioned by heat, which in a close apartment seeks to diffuse itself on all sides, and to penetrate cooler bodies. Hence it glides through the close contexture of the glass, and in passing through leaves on the inside the portions of air and water to which it was united: it forms a cloud, which thickens as the heat passes out, till there remains too little in the chamber to hold the particles of water on the glass in a state of fluidity, and these becoming congealed produce that diversity of appearances with which the windows are covered. The beginning of these figures is formed by small filaments of ice, which insensibly unite: we at first see lines extremely fine, from which others proceed, and these in their turn produce fresh filaments, resembling those which grow from a quill. When the frost is strong, and the first crust of ice is thickened, the most beautiful flowers, and lines of various kinds, sometimes straight, sometimes spiral, are produced. We may here learn a truth very essential to our happiness. Consider the flowers which the frost has pourtrayed on the glass; they are beautifully and artificially varied: yet one ray of the noon-day sun effaces them! So the imagination paints every thing beautiful to us; but whatever it represents as attractive, in the possession of the goods of this world, is but a pleasing image, which the light of reason will dissipate.

JANUARY XXIX.

On the Use of Bread.

OF those aliments which are distributed with such abundance for the support of man, none seems to be more general or more necessary than bread. It is consumed alike by the poor and the rich, by the sick and by the healthy; and would seem to be the food more particularly designed by nature for our support, as we find the plant which produces the materials for its preparation will grow, and its fruit be matured, in almost every climate. We eat bread with pleasure from infancy to old age, whilst a continued succession of the richest viands cloys and satiates. Let us then, each time of breaking bread, be mindful of its great utility, and be grateful to the Bounteous Giver of good for such a blessing. But how can we render our gratitude more acceptable, than by dividing a portion of the bread which we possess in abundance amongst those who have received a more limited quantity? And by doing this, each time that we break our fast, we shall have the pleasing satisfaction of knowing, that the mouths of the hungry are filled, and the needy sent away rejoicing for the plenty which the favour of heaven permits us to enjoy.

JANUARY XXX.

Of our Duty in respect to Sleep.

It is painful to observe that most people abandon themselves to sleep with the utmost carelessness. Considering it only in respect to our bodies, the change produced in them by sleep is very considerable and important. If we consider it in other respects, and reflect upon what may take place during the awful stillness of the night, it appears to me, that we ought never to resign ourselves into the arms of sleep without due reflection upon our state, and being in some degree prepared for what may take place.

How thankful should we be to the Creator for the blessings of sleep! Those, whose hearts are oppressed with grief, whom doubts and anxiety assail, whom maladies afflict, tossing on their pillow, a prey to care and distracting thoughts, alone can estimate the value of sleep, or know the sweets of its influence.

Let not its treasures be abused; do not indulge them to excess, by suffering indolence and effeminacy to prolong your slumbers beyond the time which nature seems to require; nor suffer avarice, ambition, or any passion to curtail the necessary hours of repose. Above all, endeavour to secure a pure repose by the tranquillity of your mind; let it not be ruffled by contending emotions, nor disturbed by the pangs of a conscience ill at rest; and be well prepared to meet the presence of your God; for you know not but this night you may be amongst the number of those who lie down to rise no more. Let this be your thought: "If during this night my soul is required of me, am I ready to stand before my Maker, before that Being from whom nothing is hidden? We daily feel our deficiencies, and the weakness of our hearts; which we beseech the Lord to pardon and to blot out from all remembrance, for the love of Christ Jesus."

JANUARY XXXI.

Of the Revolutions which are continually taking place in Nature.

All the vicissitudes of nature are derived from those immutable laws, which the Creator established when he made the heavens and the earth to rise out of chaos. Since that period, upwards of five thousand years have passed away, and the inhabitants of the heavens and the earth have witnessed at certain times the return of the same vicissitudes, and of the same effects; they still continue to see that sun, that moon, and those stars, which God once formed, revolve with regularity in their destined course, and perform with uniform order their allotted revolutions. If we ask what power overrules them, what influence determines their course, their order, and regularity, what force governs their destination, and preserves them from clashing in their orbs, or from whirling off into the vast space of Heaven, we are led to the great First Cause of all things, the Almighty God, who has marked out the circle they are to describe in the heavens, who directs their course, and preserves the beauty and the harmony of the universe with wisdom and power too great for finite beings to conceive or to comprehend.

Nearer to us, the elements are in continual agitation. The air is ever in motion, and the waters unceasingly flow; rivers beginning with small and imperceptible sources, increased by a thousand tributary brooks, form streams, which rising in their course, swell to an amazing bulk, and roll majestically towards the ocean, into which they incessantly heave their accumulating waves. From the sea's vast surface vapours arise, and collected in the sky, form clouds, which continually breaking, shower down the collected water in the form of rain, hail, or snow; and this penetrating the bosom of the earth, and making its way into the depths of the mountains, supplies the original sources of the streams, thus preserving an endless circulation.

The seasons continue for a limited term, and succeed each other in the order prescribed from the beginning of time. Each year the earth resumes her fertility, vegetation flourishes, and the returning harvest gladdens her inhabitants: her gifts are never exhausted, because her productions are always returned to her. Winter arrives at the appointed time, and brings the necessary repose; when this is obtained, spring succeeds, and nature awakes from her short sleep with gaiety, pleasure, and love. This circulation is observed in every living creature; the blood transmitted from the centre flows by different ramifications of vessels to the most distant parts of the body, imparting to them life and vigour, and then returns to the heart, whence it proceeded. All these revolutions lead us to the contemplation of Him who fixed their foundation at the creation of the world, and has since by his power and his wisdom continued to direct them with unceasing perfection.

We have now seen the conclusion of this month, which is gone for ever; we can never experience its return under exactly the same circumstances. The period will at last arrive when all the vast machinery of this universe must stop, and all its wheels be motionless; when the spheres shall cease to roll, and all the defined periods of time be lost in eternity. But the infinite and immutable God will still remain, and with him all those into whose nostrils he has breathed the breath of life.

FEBRUARY I.

Every Thing in Nature conduces to the Good of Mankind.

It behoves thee, O man! to be deeply sensible of the love and preference with which God has honoured thee, in distinguishing thee from all other creatures, by so many advantages. Acknowledge, as thou oughtest, the privilege of being peculiarly the object of the Divine liberality, of being the chief of whatsoever he has formed for the manifestation of his glorious attributes. It is for thee that all nature labours; in the earth, the air, and the waters. For thee the sheep is clothed with wool; the horse by his horny hoofs is enabled to bear heavy loads, and climb the most rugged steeps; the silk-worm spins her soft web; the fishes in the ocean are nourished; the bee burrows in the bosom of the sweetest flowers, and extracts their treasures; the stubborn ox submits to the yoke: and for thee the forests, the fields, and the gardens are exuberant in riches, the very mountains are fruitful, and the depths of the earth reward the toil of him who explores their recesses.

It is true that, compared with other animals, thy wants are very numerous; but thou art infinitely better provided with faculties, talents, and industry, to make every thing around thee subservient to thy utility and pleasure. Thousands of creatures contribute to nourish thee, to clothe, to make thy habitation, and to furnish thee with comforts and conveniences innumerable.

But the bountiful Creator has not rested here; he has not merely provided for thy wants, he has condescended to procure thee every variety of charms: for thee the lark carols her lay, and Philomela makes the groves echo to her song; the meads and the lawns charm thee with their varied beauties; and the air far round smells sweet with the flower-scented breezes. But thou art infinitely blessed beyond all these, in that noble faculty of reason, which makes the haughty lord of the forest to crouch at thy feet, and the monarch of the ocean contribute to thy riches; which enables thee to walk abroad through nature, and contemplate the grandeur, beauty, and magnificence, of her works, and not to rest satisfied in the admiration of their order and harmonious catenation, but to reflect upon the first cause of their being; and though removed from their presence, to be still able to enjoy endless delight, from the pleasing recollection of their beauty and sublimity, heightened by the power of imagination.

Such meditations as these could not often fill the mind, without our hearts being warmed with the sensations of love and of gratitude for the Divine Creator, When we look around us, and contemplate the vast spectacle of nature; if we soar into the heavens, or dive down into the deep; we shall find all created things ultimately conducing to our good. And surely we cannot more effectually answer the great end of our being, and in some degree requite the goodness of God, than by cultivating those talents which he has been graciously pleased to confer upon us, and call forth all those finer feelings of the heart which he has permitted us to enjoy. Without the one, we shall never be enabled to comprehend any portion of the sublimity of nature and nature's works; without the other, in vain will the sighs of the miserable break upon our ear, or the pangs of the afflicted meet us in the way. The storm may howl around, and the tempest roar, but secure in ourselves we shall be regardless of another's suffering. The consequences must then be, a conscience seared, a mind weak and contracted, and a heart alive only to villainy and ingratitude. Can such ever be the language of Christianity, or the conduct of Christians; of men for whom ineffable happiness and joy is in store, who are looking forward to the holy kingdom of Christ, "where shall be alone found pleasure without alloy?"

FEBRUARY 11.

Of the Influence which Cold has upon Health.

In these severe winter months, it is not unusual for many people to be lavish in their praises of the other seasons. Spring, summer, and autumn, whilst we enjoy their blessings, are little attended to; but when we no longer profit by their advantages, we praise them beyond measure. It is usual with men to disregard their present benefits, and only begin to feel their value when they can no longer enjoy them. But is it true that those three seasons alone possess every advantage? Is winter really so great an evil as some represent it to be? These are important questions, as they considerably influence our content and repose.

Spring and autumn are sometimes dangerous from the great and sudden changes of temperature, and the frequency of epidemic diseases; and in summer the heat is often very oppressive, and productive of debility and various maladies. In winter these inconveniences are not experienced, the health is generally better, the body more vigorous, and the spirits cheerful. In summer, when sinking under the fervency of the sun's rays, how we sigh for the shady retreat, and the evening breeze to refresh our languid frame; whilst during the cold of winter we are active and alert, and rarely find the cold so intense that exercise will not procure us a grateful warmth.

Thus even winter may contribute to our health, and to our pleasures; the Creator has provided for our good in this equally as much as in the other seasons: if we are discontented, if we do not enjoy so good a state of health, the fault probably rests with ourselves. Perhaps we pass the time in idleness and inactivity, and, immured within close and heated rooms, never breathe a pure air, nor go abroad to enjoy many of the days which really are very favourable and mild; or, a prey to anxiety and distrust of the future, our days and our nights are consumed in hopeless lamentations; or we corrupt our morals, and destroy our health and peace of mind, by intemperance. How happy might man be, how regular his health, if he never violated the laws of nature, nor departed from the due bounds of moderation! if he made repose alternate with labour, and pleasure with business! Let us then henceforth apply ourselves constantly to fulfil the great designs of the Creator towards us; and serenity of mind, and gaiety of heart, will render our days cheerful, whilst virtue and temperance will make our disposition mild, and our health firm.

FEBRUARY III.

An Uniformity of Temperature would be disadvantageous to the Earth.

Many people suppose that the earth would be a paradise, if throughout the globe there was an equal distribution of heat and cold, the same degree of fertility, and the same division of day and of night. But admitting that things were thus arranged, and that in every part of the world there was the same degree of cold and heat, is it true that mankind would gain by such a regulation more of nourishment, of convenience, or of pleasure? On the contrary, if God had complied with such foolish desires, the earth would have been a miserable and sorrowful habitation. By the present wise arrangement there is an infinite diversity in the works of nature. But what a sad uniformity would reign, how the earth would be spoiled of her beauties and her charms, if the revolutions of the seasons, of light and of darkness, of cold and of heat, were no longer to take place. Thousands of plants and of animals, which can only multiply in countries where the heat is at a certain degree, would soon cease to exist. Amongst the immense variety of natural productions very few can live in all climates. The greater part of creatures inhabiting cold countries could not support the heat of warm climates; whilst those transported from the torrid zone to the regions of the north could as ill bear the change. If then an uniformity of temperature existed, many natural productions must perish, and nature being deprived of the charms of diversity, we should lose innumerable blessings.

If every country of the earth produced the same things, wore the same appearance, and possessed equal advantages, the necessity of intercourse would be done away; commerce must cease, and many arts would remain unknown: the sciences also would suffer from the want of communication. Besides, how should we be able to regulate the degree of heat and fix the temperature? Was it every-where as hot as is the torrid zone, who could support the temperature? For those regions which are cold always withdrawing a portion of heat from those which are hotter, the heat diffused through the earth would much exceed that of the torrid zone; and thus men, plants, and animals, must all perish. Suppose again a temperate heat should every-where pervade the earth, of such a degree of temperature as should be beneficial to all creatures, the air must then have the same degree of elevation, density, and elasticity. But if this were to take place, one chief cause of the winds would be removed, and the most disastrous consequences must result from their cessation. The air would become loaded with impurities, the equable degree of heat over the earth would occasion maladies, contagions, and plagues, and our imaginary paradise would be converted into a desert.

Wise and beneficent Creator! all that thou hast done is good. This confession is the result of the reflections I have made whilst contemplating thy works. I wish always to think thus at the sight of every object which nature presents; and, instead of vainly imagining faults and imperfections, may I ever call to mind thy infinite wisdom, and the weakness of my own capacity!

Many things which at first view appear contrary to the order, and unnecessary to the utility, of the universe, are arranged with wisdom, and regulated by goodness and beauty. What may to me seem insufficient and imperfect, furnishes to men of a more enlarged understanding subjects of just admiration, and calls forth their praises of the infinite perfections of the Creator. As in nature he has made an apparently unequal distribution of cold and heat, of light and darkness; so also he has displayed great diversity in his dispensations towards rational creatures, and has not assigned the lot of each in a similar manner. Yet in this, as in nature, his ways are ever the ways of wisdom and of love; all that the Lord has ordered and regulated is perfect and admirable; all his paths are mercy and truth: to him be glory for ever and ever.

FEBRUARY IV.

Consideration of the Stars.

To every person who delights to reflect on the works of God, the firmament of heaven, where the resplendent stars roll their vast orbs, opens a noble field for observation. The harmony, the grandeur, the multitude, and the brilliancy of these celestial spheres, offer a most enrapturing spectacle to him who loves silently to contemplate the works of nature. The appearance of the stars alone, supposing even that we had no knowledge of their nature and design, would be sufficient to fill the soul with joy and with admiration; for where can we see any object so striking and magnificent as the expanse of æther, resplendent with the varied luminaries, which, in their several degrees of magnitude and brightness, traverse the heavens in cloudless majesty? But can we suppose that an infinitely wise Being has adorned the celestial canopy with these sublime objects merely as a beautiful spectacle or picture? Would he have formed those suns merely that the inhabitants of this earth might have the pleasure of seeing in the firmament a number of luminous points, of whose nature and destination they know little, and which are often not to be seen at all? No one who takes a broad survey of nature, and observes the wonderful harmony and agreement between all her works and their proposed end, can suffer such an idea to enter his mind. We cannot doubt but God, when he ordained the stars to shine, had a much more exalted view than to procure for us an agreeable sight. Though we cannot precisely determine all the particular ends which they may serve, it will not be difficult to acknowledge that one of their uses is the advantage as well as ornament of this world, of which the following observations will doubtless convince us.

Amongst those stars which are most easily distinguished, there are some constantly observed in the same part of the heavens, and which we always see immediately over our heads. These are certain guides to those who travel during the obscurity of night, by sea as well as by land. To the mariner they point out his course, and enable him to reach the place of his destination. Other stars vary their aspects, and though they always preserve the same situation with regard to one another, they daily, with respect to us, change the order of their rising and setting; and their variations, which are performed in regular order, are to us of great utility: they serve to measure time and to regulate it by fixed laws. The constant and stated revolutions of the stars accurately determine the end and the return of the seasons. By these means the labourer knows precisely when to trust his seeds to the earth, and in what order to conduct the cultivation of the fields.

But whatever benefit the stars in these respects may contribute to the earth, we ought not to presume that is the only or the principal end which God has proposed in the creation of these wonderful bodies. Is it possible to believe that the wise Creator has filled the immense expanse of æther with millions of worlds and of suns, merely, that a few individuals of this earth may be enabled to measure time and ascertain the return of the seasons? Doubtless these numerous globes are formed for much nobler purposes, and each one has its particular destination. All these stars being so many suns, with the power of communicating light, heat, and animation to other spheres, is it probable that God should have endowed them with this power in vain? Would he have created suns which can shoot their rays far as the earth, unless he had also created other worlds to enjoy their benign influence? Would God, who has peopled with so many living creatures this earth, which is but as a point in the heavens, have fixed in the regions of space so many vast orbs, desert and uninhabited, fruitlessly to roll their course? Certainly not. We have every reason to believe that each of the fixed stars which we see over our heads by thousands, one above another, and all around, far as the eye can penetrate, and yet farther, to distances immeasurable by our limited faculties, are suns equally resplendent as that which beams on our horizon, the life of our system; have each worlds revolving round their centre, and receiving the blessings of their influence. We may also suppose that these spheres serve as abodes to different orders and species of living creatures, all rejoicing in the power and celebrating the magnificence of God.

Though these are only conjectures, formed from the little we know of the wonders of nature, yet they are conjectures which fill the mind with awe and reverence, open to it a vast and boundless field of thought, do away the contracted and partial notions we may entertain of ourselves, and tend to soften and ameliorate our hearts.

FEBRUARY V.

Curious Formation of the Eye.

The eye infinitely surpasses all the works of human industry. Its structure is the most wonderful thing the understanding of man can become acquainted with: the most skilful artist cannot invent any machine of this kind which is not infinitely inferior to the eye; whatever ability, industry, and attention he may devote to it, he will not be able to produce a work that does not abound with the imperfections incident to the works of men. It is true we cannot become perfectly acquainted with all the art which Divine Wisdom has displayed in the structure of this beautiful organ; but the little that we do know suffices to convince us of the admirable intelligence, goodness, and power of the Creator.

In the first place, the disposition of the exterior parts of the eye is excellent. How admirably it is defended! Placed in durable orbits of bone, at a certain depth in the skull, the globe of the eye cannot easily suffer any injury. The over-arching eyebrows contribute much to its beauty and preservation; and the eyelids more immediately shelter it from the glare of light, and other things which might be prejudicial; inserted in these are the eyelashes, which also much contribute to the above effect, and also prevent small particles of dust and other substances striking against the eye.*

The internal structure is still more admirable. The globe of the eye is composed of tunics, humours, muscles, and vessels: the first coat is called the cornea, or exterior membrane, which is transparent anteriorly, and opake posteriorly; next the choroid, which is extremely vascular; then the uvea, with the iris, which being of various colours, gives the appearance of differently coloured eyes, and being perforated, with the power of contraction and dilatation, forms the pupil; and lastly, the retina, which is a fine expansion of the optic nerve, and upon it the impressions of objects are made. The humours are, first, the aqueous, lying in the fore part of the globe, immediately under the cornea; it is thin, liquid, and transparent: secondly, the crystalline, which lies next to the aqueous, behind the uvea, opposite to the pupil; it is the least of the humours, of greater solidity, and on both sides convex: the third is the vitreous, resembling the white of an egg; it fills all the hind part of the cavity of the globe, and gives the spherical figure to the eye. The muscles of the eye are six, and by the excellence of their arrangement it is enabled to move in all directions. Vision is performed by the rays of light falling on the pellucid and convex cornea of the eye, by the density and convexity of which they are united into a focus, which passes the aqueous humour and pupil of the eye to be more condensed by the crystalline lens. The rays of light thus concentrated penetrate the vitreous humour, and stimulate the retina, upon which the images of objects, painted in an inverse direction, are represented to the mind through the medium of the optic nerves.

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* Besides these, amongst the external parts are enumerated the lachrymal gland, which secretes the tears; the lachrymal caruncle, a small fleshy substance at the inner angle of the eye; the puncta lachrymalia, two small openings on the nasal extremities of each eyelash; the lachrymal duct, formed by the union of the ducts leading from the puncta lachrymalia, and conveying the tears into the nose; the lachrymal sac, a dilatation of the lachrymal canal.—E.

Thus we have abundant cause to thank the God of mercy who has so exquisitely formed the eye, and to acknowledge the wisdom, power, and admirable skill displayed in its structure and wonderful organisation. May we never forget the benefits we have received, nor the blessings we enjoy, but ever look up to the Author of our being with gratitude! When we see the various woes and miseries which afflict many of our fellow-creatures, let not our eyes refuse the tear of sympathy, nor our hearts be shut against compassion. May tears of joy flow from every eye, when we receive the renewed proofs of God's goodness and love; and let us rejoice when we are enabled to soothe the anguish of our afflicted brethren, or wipe the tear from the poor and disconsolate. Thus shall we fulfil the design of our Maker, and enjoy the approbation f our God.

FEBRUARY VI.

The Fog.

Amongst the numerous phenomena which we see in winter, the fog, or mist, particularly merits our attention. It is formed of exhalations, which occupy the lower region of the atmosphere; they arise from the earth, and are condensed by the greater coldness of the surrounding air. During the continuance of a mist, a grey mantle is spread over the face of nature; every object is imperfectly seen and enveloped in obscurity: the eye often in vain attempts to pierce the thick curtain; all is confused and indistinct; the rising sun slowly disperses these vapours, which at length are gradually dissipated; his power is confessed, obscurity vanishes before his rays, the surrounding objects are restored to our view, and the heavens resume their wonted light and beauty. The mist is, however, still seen on the earth, but it is close to the ground, or hangs on the roofs of houses; and the horizon, so long veiled from sight, now opens upon us. As the face of the earth, before the sun beams upon it, is overspread with fog, dew, and vapours, so once were the blessed regions of science and of knowledge enveloped in the thick mist of ignorance and of superstition; whole countries were obscured, kingdoms obumbrated, and darkness ruled with a leaden sceptre the groveling race that licked and grew fat beneath her chains; whilst error, prejudice, and sloth, so clouded their faculties and benumbed their feeling, that light was not sought for, nor wisdom esteemed; human reason was no more, and innocence had retired. At length the moment arrived when, the measure of their iniquity being filled, the triumph of darkness, of ignorance, and of superstition, was to cease. The sun once more dawned, and flashed such a steady blaze of light from the horizon, that the gloom, which for centuries had buried man in obscurity, and rendered torpid all his powers, at once fled, overpowered by the fervency of the beams which penetrated her secret recesses, and exposed to the face of day the horrors of her naked deformity. But, because in this day of light and of truth we are much superior to those dark ages in every thing that can dignify and bless human nature, let us not think our work completed, and that we have no more to do. Though emerging from Gothic gloom and Vandalic darkness, the light shines with greater brilliancy and power, we are still young in knowledge, and very ignorant of the true and pure tenets of religion, which still labours to throw off the shackles of ceremony and the yoke of superstition, with which the ignorance, the presumption, and the audacity of man has obscured her simplicity and sullied her purity. The blessed period is probably hastening, when an enlightened race of men shall look back upon our generation with as much compassion as we now feel for the victims of oppression and monkish superstition, in what we are pleased to call the dark ages.

FEBRUARY VII.

Of the Tides.

THE greatest part of the surface of the earth is covered with water, which is called sea, and is very distinct from lakes and rivers. These contain more or less water as the season is dry or humid, whilst the vast body of the ocean ever preserves its bulk unaffected by such contingencies. Twice in the day it ebbs and flows according to certain rules; when at its greatest height on any shore it begins to decrease, which lasts about six hours, and is called the ebb. At the end of six hours it begins again to flow, and continues to increase six hours longer, when it gains its greatest elevation; it then again retires, and rises again in the same space of time: so that in twenty-four hours the sea has twice ebbed and twice flowed.

This regular and alternate motion of the sea is called its flux and reflux, or ebbing and flowing, and constitutes the tides. When it rises and flows towards the coast it is called flux; when it retires from the shore, reflux. These tides are chiefly influenced by the moon, and in some degree by the sun, and are greatest during the new and the full moon, and least in the quarters. When both the luminaries are in the equator, and the moon at her least distance from the earth, the tides rise the highest. The greatest tides do not happen till after the autumnal equinox, and return a little before the vernal. Their motion is more remarkable in the ocean than in small seas, and would continue for a great length of time though the sun and the moon were to be annihilated. There is some little variation in the flux and reflux, which causes the tide of the succeeding day to be rather later than that of the preceding one; and they do not return at the same hour till the expiration of thirty days, the period of a lunation.

Thus we find the tides are affected by the changes of the moon, and influenced by its power of attraction; the sun also contributes to their production, and the combined action of these two luminaries furnish a complete solution of all the phenomena presented to us by the flux and reflux of the sea. The advantages arising from the tides are great; by their means, the streams of rivers being checked in their course to the sea, the bed of the river becomes deeper, and ships of the largest burden are enabled to sail up their channel with safety; vessels approaching bays wait for this increase of water, and then enter in security; aided too by the tides, they sail up rivers against their natural course, and carry the means of plenty and abundance into the interior of countries. Another great advantage in the tides is, that by their means the waters of the ocean continually roll to and fro, and are thus preserved fresh and free from putridity and stagnation; for though frequently agitated by the winds, and often perturbed by a storm, the waves would soon recover from such partial interruption, and regain a state of calm, were it not for the continued flux and reflux of the tides. From this ebbing and flowing of the sea, we may call to mind the fluctuation of life, which increases to a certain height and then declines. Every thing in this state of probation is fluctuating, and of uncertain tenure; no joy, no pleasure is permanent; the gayest moments of happiness, the hours of mirth and festivity, suddenly depart; and man, in the despondency of his heart, feels the misery of his existence, and sighs for a state of purity and of happiness, where the troubles, the cares, and the sorrows, which here afflict and render comfortless his being, can never intrude to disturb his felicity, or molest his repose. Let us then, by the integrity of our conduct, the propriety of our actions, and the humanity of our hearts, merit the reward of a hope-inspiring certainty of obtaining such a happy abode, to cheer us on our way through this dreary pilgrimage; and when anxious and ready to faint, to gladden our souls with some bright gleams of the heavenly regions, where bliss, and ecstacy, and perfect felicity, for ever dwell.

FEBRUARY VIII.

The Sun is not always apparent.

THE heavens are not continually obscured by clouds of rain and snow. After showering down their contents upon the earth, they sometimes separate, and serenity again diffuses her cheerful smiles throughout the sky. The aspect of the sun, after an obscurity of many days, again animates life, and fills the creation with joy and youth; from his appearing so seldom in winter, and then for only a very short space, we better know how to appreciate his blessings. And, perhaps, this will hold good with regard many other gifts of Providence: we are too apt to consider the choicest blessings of life with indifference, if constantly in our possession. Health, repose, friendship, and affluence, with many other benefits which we daily enjoy, seldom appear to men as valuable as they really are; and their true worth is often never felt till they are irrecoverably lost. Rightly to know and sufficiently to feel the happiness of a bosom friend, perfect health, and an independent income, we should first have been stretched on the bed of sickness, deserted by our dearest friends, and reduced to the miseries of hopeless poverty.

How uncertain and inconstant is the serenity of the sky in the winter season! How little are we able to rely with certainty upon the possession of the beneficent rays of the sun! At present he shines with unclouded majesty; but soon the clouds will thicken, and, before noon, the splendour and the beauty, which in the morning shone upon the earth, will be eclipsed. Such is, likewise, the instability of all human transactions; we can never promise to ourselves durable pleasures, nor uninterrupted felicity. This consideration should render us careful and circumspect in the hour of prosperity, and moderate our desire for earthly joys, since every thing is subject to change and inconstancy. Virtue alone is immutable; virtue alone makes us support, with unbending firmness, the vicissitudes and the contingencies of life, unmoved by the frowns or the smiles of fortune; and enables us to sustain the mocks and the scorns of the world, whilst we pity and compassionate the weak children of delusion, who show their gilded wings in the sun-shine of to-day, and to-morrow are heard of no more.

FEBRUARY IX.

Of Earthquakes.

The earth is subject to two kinds of shocks; one of which is caused by the action of subterraneous fires, and the explosion of volcanoes. These commotions are only felt at short distances, and when the volcanoes act immediately before a complete eruption. As soon as the materials which form the subterranean fires begin to ferment and inflame, the fire makes an effort in every direction; and, if it does not find a natural vent, throws up the earth with violence, and forces a passage. In this kind of earthquake the shock is more confined, seldom extending for many miles.

But there is another species of earthquake, very different in its effects, and most likely produced by very different causes. In this no eruption takes place, but the shaking of the earth is frequently felt at an immense distance; we have instances of their being felt at the same time in France, England, and Germany: they are accompanied with a deep rumbling sound, and their effects are often dreadfully fatal.

Of all the catastrophes and desolations which have ever visited the earth, none, since the flood, have been so terribly awful in their effects, and destructive in their consequences, as earthquakes. When rivers swelled into rapid torrents burst their banks, and with one immense gush pour upon the neighbouring country, sweeping every thing in their way, there is still some resource; we can fly to the tops of our houses, or ascend the summits of the mountains, and in safety behold the vast deluge, which, soon as its first fury is abated, gently retreats to its former boundaries. But when the earthquake violently perturbs the face of nature, when the earth heaves like the waves of the ocean, agitated by a storm, and opens a tremendous chasm, which receives within its abyss a whole city, vain is the thought of flight, and ineffectual the hope of safety. The thunder roars, and the red lightnings flash, and desolation marks their course; the plague sweeps through a country, and despair and haggard wretchedness track its wide-wasting progress; but in an earthquake, the earth heaves, opens, and whole provinces are seen no more, whilst the perturbation affects half the globe. Who can stand before the Almighty when he exercises his power? Who can oppose the God of Nature when he rises to judge the nations? The hills tremble, and the mountains rock to their centre. The foundations of the earth are shaken, and the inhabitants greatly fear. His word consumeth like fire, and the rocks melt at his coming. But let not man vainly imagine that these convulsions of nature are merely to destroy him, when a blast of wind might in an instant lay waste the whole creation. Can any one be so weak as to suppose that the whole artillery of heaven must be employed, when a few individuals are engulphed in the bosom of the earth? and that to punish the iniquity of a town, or to strike terror into the inhabitants of the earth, nature is to be thus convulsed? Consider rather, in these dreadful visitations, a much nobler and more exalted view, Consider them as instruments in the hands of God, working for the general good and advantage of mankind. Earthquakes answer certain ends in the system of nature, without which it probably could not attain its present degree of perfection; and in all great states, it is found that individual must give way to general good: so also with regard to the earth and its inhabitants, it is better that a small part suffer than that the whole be destroyed. Let us then acknowledge that all which appears terrible in nature, all the seeming imperfections in the universe, are necessary for the due order and preservation of the whole; that partial evils are always to be disregarded; and that all tends to show the glory and perfections of God. We shall then adore and bless his name, though desolation impend and destruction threaten; we shall repose upon him with confidence, and though the final termination of the world may seem to be at hand, and the mountains, hurled from their bases, be plunged into the sea, He will be our protector, our supporter, and sure resting-place.

FEBRUARY X.

Upon Life and Death.

God has observed the most exact and wonderful order in the life and death of man; both are measured and regulated in the best manner: and nothing is more evident than the wisdom of God in the population of the world. In a given number of years, a proportionable number of people of every age dies. Out of thirty-five or thirty-six living persons, one dies each year; but the proportion of births is rather greater; for ten who die, in the same period of time, and among the same number of persons, twelve are born. In the first year, one infant out of three generally dies: in the fifth year, one out of twenty-five; and so on, the number of deaths lessening till the age of twenty-five, when they again begin to increase. How evident is the care which Divine Providence extends over his creatures! From the very moment of their entering the world he protects and watches over them; the poor as well as the rich enjoy his protection. Let us not then anticipate the hour of death with fear, nor render unpleasant our time with apprehension; but firmly rely on the all-sufficient arm of God, who will support us through life with tender care, and when it seemeth meet, enable us to resign our bodies to their native dust with firmness, in the confidence of our soul, divested of its cumbrous load, winging its flight with joy to the regions of eternal glory. Let not the supposition of a long life, arising from a present good state of health, make you forgetful of the duties you owe to God and to one another, under the idea that there will be time enough allowed you to prepare for the awful change. Life is extremely uncertain: though from strength of constitution some individuals may not be so liable to illness, they may be hurried off by accidents; and no man, however strong, is secure from contagion. But a much more powerful motive than fear should excite us so to act, that our deeds shall always find favour with the Almighty; the pleasure arising from good actions, which is a constant reward and source of pure delight to the virtuous, the sensations of which are unknown to the wicked, who exchange the only true enjoyment we are capable of for false and fleeting pleasures, whose consequences are sorrow, disease, and death.

FEBRUARY XI.

Formation of Ice.

When water is exposed to the influence of cold air, it gradually loses its fluidity, and becomes a solid body, which we call ice. This change, which at this season of the year comes so frequently under our notice, is well deserving of attention. Ice is of less specific gravity than water; for if we put a vessel containing water, the surface of which is frozen over, into a temperate heat, the ice soon detaches itself from the sides of the vessel, and floats on the top of the water. One cause of its lightness is the increase of volume; for although the general law of cold is to contract, in this instance, at the time of congelation, such an expansion takes place, that vessels are frequently broken by the power of the dilatation, the violence of which is sufficient to cleave a globe of copper of such thickness as to require a force of 28,000 pounds weight to produce a similar effect.

When the ice first shoots in crystals over the surface of the water, it is transparent; but as it increases in thickness, becomes opake, which is owing to the air contained in the ice occasioning a more frequent refraction of the rays of light. Exhalations continually arise from the ice, even during the greatest cold. It is found from experiments that, during the most intense cold, four pounds of ice lose one pound weight by evaporation in the space of eighteen days.

The manner in which ice begins to form is very curious; when it slightly freezes, a number of needle-shaped crystals shoot in all directions from the inner circumference of the vessel, making numerous angles, and uniting together, form upon the surface of the water a very thin pellicle of ice; to these succeed more, which multiply and enlarge in form of plates, and being increased in number and thickness unite to the first pellicle. As the ice thickens, a multitude of air-bubbles are seen, and the greater the degree of cold, the more these increase. When it freezes very strongly, a thin crust is formed, which shoots from the circumference to the centre; under this others are seen of a triangular shape, with the base parallel to the sides of the vessel, and these soon increase so much that a very thick mass of ice is formed.

By frequently reflecting upon these phenomena, we shall be more and more convinced of the beauty of nature, and of the harmony and regularity that pervade her minutest productions, all tending to fulfil the views of a just and wise God; and though we have not the satisfactory consolation of knowing the full extent of those views, the little we are permitted to understand of them is enough to excite in us the desire of adoring the all-wise Creator, and celebrating his power, whilst we magnify his holy name.

FEBRUARY XII.

Spherical Figure of the Earth.

It was once generally supposed that the earth is a vast plain; but were this the case, its external boundaries might be arrived at, and in approaching any place we could not discover the tops of towers and mountains till we have seen their bases. The earth is incontestibly proved to be a globe, though not exactly spherical, for it is rather more elevated under the line, and flattened towards the poles, something resembling the figure of an orange. But this deviation from a true sphere is very slight; about fifty miles, a difference scarcely perceptible in a globe whose circumference is 25,020 miles, and diameter 7964. The rotundity of the earth is demonstrable from its shadow in eclipses of the moon being always bounded by a circular line, and by its having been frequently circumnavigated; besides, if it was not spherical, how would the stars appear to rise and to set sooner to the countries eastward than to those more to the west.

Here we have fresh cause to admire the wisdom of the Creator, who has organised this earth with the greatest perfection, with a form so well adapted for the benefit of the inhabitants. Light and heat, which are so necessary to the creation, are by this means distributed with uniformity, and in a more equable degree throughout the earth. It is from this that the due return of day and night is ensured, and that the degrees of heat and of cold, of moisture and of dryness, are rendered so regular and constant. The water is equally distributed over the earth, and the winds every-where cause their salutary influence to be felt. Had the earth any other figure, we should be deprived of all these advantages: some countries would be like a paradise, whilst others would be in a state of chaos; one part would be buried by the waters, and another parched by the fervour of the sun. Some countries would be exposed to furious tempests, which would devastate and destroy them; whilst others would be exhausted for want of fresh currents of air. One part of the world would be condemned to endure a perpetual heat, and another would be deprived of the sun's rays.

If we did not here acknowledge the all-powerful hand of a wise and beneficent Creator, we must be guilty of the greatest pride and most consummate ignorance! Should we deserve to be the inhabitants of an earth so admirably arranged and exquisitely fashioned, if, upon seeing its beauties and matchless order, and enjoying a thousand blessings, we denied the existence of an all-creative Power, or were wanting in acknowledgements for his mercy and goodness? May we never be guilty of such base ingratitude; but, filled with sentiments of awe and sublimity at the sight of God's wonderful works, may we elevate our thoughts to heaven, and fixing our minds upon the Divine Power, humbly adore his wisdom and goodness.

FEBRUARY XIII.

Short Duration of Snow.

We see the instability of the snow, and the rapidity with which it disappears when played upon by the sun-beams, or exposed to the effects of a humid mild air, and frequent showers. Frequently the whole aspect of nature, in a few hours, assumes a new appearance, and scarcely a trace of snow is left behind. By these sudden changes we may justly be reminded of the inconstancy and vanity of all human affairs. Every season, and every variation that their succession induces, declare to us with a loud and impressive voice, that all is uncertain, all vain, and of short duration. If we look around us through the vast field of nature, shall we find any thing which is not fragile and perishable? How soon are we bereft of the pleasures of sense*; scarcely do we begin to enjoy them when they elude our eager grasp! Often when the sun first gilds the earth we are light, easy, gay, and content, smiling with comfort and plenty: but ere night has drawn her sable curtain, our pleasure is fled, our enjoyment ceased, and grief weighs heavy on our aching heart. Where exists the individual who, at some period or other, has not cruelly felt the uncertainty and short duration of terrestrial joys, and who has not known the pangs of disappointed hope? What is more inconstant than the favours of fortune, or more uncertain than the continuance of life and the blessings of health? Yet whilst we are in possession of these benefits, such reflections seldom or never occur; like those who, tempted by the beauty of some winter's morn, sally out unprepared for the storm, which at that season they ought to expect. Whilst fortune smiles, and we live in a round of gaiety and pleasure, we laugh at all fears of their ever failing, and despise all thoughts of preparing for an evil day. But fleeting as the snow beneath the sun-beams are all the enjoyments and gratifications which do not arise from the influence of religion, the exercise of the mind, and the feelings of the heart; cultivate these, and you will be enabled to enjoy a portion of that felicity which endureth for ever—the sure reward of virtue and a well-spent life.

FEBRUARY XIV.

The Creation.

The time was when this earth, the heavens, and their revolving suns, existed not: God ordained their being, and at his almighty will they arose. Before that period the whole was one huge and shapeless mass, where confusion ruled and chaos held her empire; the earth was without form and void, and darkness was upon the face of the deep. On the first day of the creation the spirit of God moved upon the face of this rude and formless heap, which now felt a motion penetrate deep as the centre, from above and beneath, and all around. He said, Let there be light, and there was light; and God called the light day, and the darkness he called night. Hitherto the waters and the earth were confounded together, undistinguished from each other. God separated them, and said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters. And God made the firmament, and divided the waters which were above the firmament, and it was so; and God called the firmament heaven: and the evening and the morning were the second day. The waters still covered the face of the earth, when on the third day God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear; let the earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit after its kind: and it was so. On the fourth day God said, Let there be lights in the firmament of heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and for years: and it was so. The sun appeared as the greater light to rule the day, and the moon, with inferior splendour, to rule the night; the stars also were then created. On the fifth day God said, Let the waters bring forth abundantly the moving creature that hath life; and immediately the whales rolled in the ocean, and the seas teemed with life: and the winged fowl he gave to possess the air. And God blessed them, saying, Be fruitful and multiply, and fill the waters in the seas; and let fowl multiply in the earth.

And God said, Let the earth bring forth the living creature after his kind, cattle, and creeping thing, and beast of the earth after his kind: and it was so. Every thing was now prepared; and God created man, to whom he gave dominion over the fish of the sea, and over the fowls of the air, and over cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. For this purpose he created him in his own image, after his own likeness, and endued with a rational soul. As a companion to man he created woman, with equal gifts and equal rule: to them both he gave dominion over the earth and all created things, and with them he rested from all the works which he had made.

Can any one reflect upon this sublime history without being astonished at the power, the intelligence, and infinite wisdom manifested in the works of the creation? Or can any one peruse it without pausing a while to admire the grandeur of the objects and the sublimity of the design? Wherever we cast our view we see the proofs of a divinity, whose glory the heavens declare, whose power unlimited their extent gives to know. It is only by being led from the sight of the objects of the creation to a contemplation of the Divinity, of his attributes, and of our own real condition, that we derive any true benefits from their presence, or even that we deserve to be inhabitants of this fair universe. But we cannot acknowledge the greatness and the glory of God in the works of the creation, without our souls being enlarged, and our hearts penetrated with love and gratitude for the Divine Author. If this truth were universally felt, we should have little need of coercion to deter men men from vice, or of lectures to excite them to virtue. Let those whose feelings are not yet callous, walk abroad and contemplate nature, where they will find objects sufficient to arrest their attention, to excite their utmost admiration, and to call forth their charity and their love. Here is the source of every thing that is great, noble, and exalted; of every thing that is sublime, beautiful, and enrapturing; and here is ever to be found the Almighty God, who alone is worthy of our homage, our praise, and our adoration.

FEBRUARY XV.

Of Brutes.

When we attentively examine the bodies of different animals, we discover many advantages which they possess over man. Many of them have bodies much stronger, and more compact than those of the human species. Most of them at their first entrance into the world are capable of using all their limbs, of seeking for their food, and of following the instinct imparted to them by nature; and are not liable to the cruel sufferings which we experience in our infancy, and which so often injure our constitution. And what an admirable instinct and sagacity they display! What address and skill they exert in the use of their senses! How exquisite is their sense of smell! How piercing their sight! How rapid, how nimble, how active all their movements! How they speed and fly along! And if we consider the wonderful structure of some of their organs, the noble and majestic figure of some animals, we shall find, with respect to bodily perfections, we often yield to, or scarcely equal, many of the brute creation.

Some people are so weak as to complain that God has not given them the wings of the eagle, the force and speed of the fiery courser, the subtle smell of the dog, the eye of the hawk, and the agility of the stag. But such desires are the offspring of ignorance, of folly, and of presumption; of men, who do not feel that they possess a soul which enables them to soar far above these animals, and to make all their powers serve the convenience of man. Without mind we should indeed be inferior to brutes, which so far excel us in bodily powers; but they enjoy these advantages to enable them to live in the state allotted them without the reasoning faculty: for miserable indeed would have been their lot, did they not possess their present advantages; or were they possessed of reason, in a state of slavery, living only to be butchered, or to perpetually toil for the benefit of man.

We have here renewed cause to admire the wisdom and mercy of Providence, who has thus formed the brute creation. We see his wisdom in having given them instinct, sagacity, and strength, in a certain degree, proportionate to their necessities; and made all subservient to man: and his mercy is manifest in their entire ignorance of their situation. They possess all the pleasures they are capable of enjoying, but they cannot anticipate evil, nor think beyond the present moment: formed for this life only, they cannot in thought penetrate unknown regions, nor feel any pleasure but from the senses; whilst the mind of man, finding nothing in this state of existence worthy to rest upon, reposes in confidence upon the certainty of a future state, where all its powers will shine with unclouded lustre.

FEBRUARY XVI.

Of the Moon.

Of all the heavenly bodies, next to the sun, the moon has the most salutary influence upon our earth; and though her grandeur and beauty did not mark her as an object highly worthy of our attention, she would yet be so from the very great benefits she produces. With the naked eye we can discover several phenomena in the moon; we find she is an opake body, with her luminous part always opposed to the sun, shining only by reflecting the sun's light; hence it follows that that side which is next the sun is enlightened, whilst the other half must be dark and invisible: when exactly opposite the sun she appears with a round illumined orb, which we call the full moon. By her continual changes we know that she shines with a borrowed light; for if the light was her own, being globular, we should always see her with a full round orb like the sun. She turns round the earth once in twenty-four hours, and finishes her complete revolution in about twenty-nine days and a half. But what we can observe by the naked eye is far short of what we discover by the aid of telescopes, and ascertain by nice calculations. How great are our obligations to those enlightened men who have extended the limits of our knowledge by researches and discoveries, which enable us to form more distinct and certain notions of the heavenly bodies! By means of their profound investigations we now know that the moon, apparently so small, is but thirteen times less than this earth; its diameter is 2180 miles, and its distance from the earth's centre 240,000. Upon the face of the moon several spots are discovered visible even to the naked eye. Some of these are pale and obscure, others more luminous, as they reflect more or less light. The luminous spots are high mountains, which reflect the sun's light from their lofty summits; and the dark spots are the transparent fluid bodies of seas, which from their nature absorb most of the rays of light, and reflect very few.* These discoveries, to which we can oppose no well-grounded objection, inform us that the moon is a body much more considerable and of greater consequence than ignorant people have imagined. The magnitude, the distance, and all that we have hitherto discovered respecting this planet, afford us fresh proofs of the almighty power of the Creator. But can this vast body have no other use and destination than to illume this earth during the night? Can this body, which in many respects resembles our world, and appears calculated to perform the same ends, and to which this earth itself serves as a moon, be created merely to produce the ebbing and flowing of the sea, and some other of the advantages we derive from it? Can it be supposed that the surface of a body some hundreds of thousands of square miles in extent should be destitute of living creatures? Would the Infinite Being have left this immense space empty and desert? We cannot reconcile such a supposition with the wisdom and goodness of God; let us rather suppose that he has established his empire in the moon as well as in our world, and that he receives aspirations of gratitude from millions of creatures who adore the same God, the same Father and Saviour, as do the inhabitants of this earth, and for the happiness of whom God has the same cares and solicitude as for us.

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* As this opinion is regarded by some to be erroneous, it may be instructive to quote that of Mr. Ferguson, who says, "Those dark parts of the moon, which were formerly thought to be seas, are now found to be only vast deep cavities and places which reflect not the sun's light so strongly as others, having many caverns and pits whose shadows fall within them, and are always dark on the side next the sun; which demonstrates their being hollow: and most of these pits have little knobs like hillocks standing within them, and casting shadows also, which cause these places to appear darker than others which have fewer or less remarkable caverns. All these appearances show that there are no seas in the moon; for if there were, their surfaces would appear smooth and even like those on the earth."—E.

But as our knowledge upon this great and interesting subject must necessarily be limited, at present let us be grateful for the certain and known benefits we receive from the moon, in which the tender cares of Providence for man are evidently manifest. The moon is so near to us that we receive from her more light than from all the fixed stars together; by this means we have a noble and sublime object to contemplate, and receive incalculable advantages from its presence; since by its light we enjoy a continued day, and are enabled to travel in safety and with pleasure, as well as pursue many necessary occupations. By its means we can also exactly measure time, and through the medium of the almanack the vulgar are benefited by the abstruser studies of the philosopher. Lord Omipotent! I adore thy wisdom and goodness in the light of the moon as in that of the sun. As I contemplate the heavens which thou hast formed, the grandeur fills me with admiration and astonishment. May I, O Lord! lift up the eyes of my understanding to thee, far above all terrestrial objects! To thee, who has created all these magnificent globes, and wisely arranged them for our benefits. The starry heavens, which illumine the winter nights, announce thy majesty, and attest the infinity of thy empire!

FEBRUARY XVII.

Rain fertilises the Earth.

THE fertility of the earth chiefly depends upon the moisture which it receives from rain and aqueous vapours. If the irrigation of the earth depended upon the care and labour of man, his toil would be unceasing; and with all his exertions he could not prevent the desolating effects of dryness and famine. Men might assemble and unite all their forces, they might exhaust their rivers and their fountains, without being able to supply the creation with a sufficiency of moisture to prevent the plants and vegetables drooping and perishing for want of water. Hence we see how necessary it is that the exhalations and vapours should be collected and retained in the clouds, which, by the aid of winds, shower down fertility upon the earth, by refreshing and renewing the vigour of plants, trees, and vegetables. The treasures so exuberantly teeming on the earth's surface are richer than the gems of Golconda or the mines of Peru; for we can live without gold and without silver, but without herbs and grain we could not exist. The advantages of rain are incalculable; it entirely renovates the face of the earth, and the furrows of the field eagerly drink the descending waters. The seeds develope their beauties, and the labours of the husbandman are rewarded. The farmer works,

[illegible]

"The vexations, perplexities and infirmities of age no longer permit me to enjoy or relish the amusements of Youth." Pa. 26th ows, plants, and God gives the increase. Man does all that depends upon his exertions, and what he cannot effect God executes; in winter he covers the seeds with a protecting mantle, and in summer warms and vivifies them by the sun's rays, and adds to their nourishment by rain. He crowns the year with his benefits, and causes his blessings so to succeed each other, that men are not only nourished and supported, but their hearts overflow with joy and gaiety.

The showers fall upon the pastures of the wilderness, and the little hills rejoice on every side. The fields are white with flocks, the valleys are covered with corn; they shout for joy, they also sing. Bless [illegible] and rejoice in your Creator; by his order the [illegible] are renewed, and succeed one another with [illegible] regularity. For us the rains descend, and the earth is clothed with fertility and verdure. God [illegible] his liberal hand, and showers down blessings [illegible] countries receive them, and joy and [illegible] th. Let us then adore the Creator, and [illegible] songs of joy and of praise to his honour and glory [illegible] r and ever.

FEBRUARY XVIII.

Of the Shortness and Uncertainty of Life.

We require frequent warnings to induce us to reflect on the shortness and uncertainty of life. Such remembrances are highly useful: for we have naturally a strong inclination to drive from our minds all ideas of death; and if that was not the case, there are always a thousand cares, and innumerable species of dissipation, which divert us from thinking upon our end, or which render such thoughts of little efficacy. It is however necessary often to reflect upon this state, which one day or other must arrive; and by frequently and duly contemplating it, we shall meet its approaches with firmness, and not sink overcome by fear. In this season of the year many images of death daily present themselves before our eyes. Nature everywhere deprived of those beauties and fascinating charms which in summer delighted our view and filled our souls with pleasure; the fields and the gardens, where we have so often walked with delight, and inhaled the gentle breezes that wafted over a thousand fragrant flowers, conveyed the sweetest perfumes and balmy airs, where every sense was joy, are now deserted, wild, desolate, and forlorn; nought is seen around but one wide waste of bleak sterility, where no verdure delights, no variety charms, and night usurps the day.

Perhaps this may be a just representation of some now flourishing in the pride of youth and the full vigour of intellect and gaiety of heart; when old age shall weigh heavy upon them, and all their former vigour, cheerfulness, and alacrity shall have ceased; when the infirmities peculiar to that state, and a temper soured by vexation and disappointment, will no longer bear the amusements and pleasing society they formerly delighted in; and when they no longer possess attractions to render them agreeable or even supportable companions. The tedious and gloomy days of such an old age will be a burthen, from the oppression of which every rational being will long to be relieved. Though the days of winter are so short we have no reason to complain, since there are so few attractions to induce us to walk abroad in this season: neither should we regret that the period of life is of short duration, but rather consider it as a blessing, since its way is often strewed with thorns and beset with evils; and many have to drink of the cup of misery even to the dregs.

Many animals pass the winter in a profound sleep, from which they do not begin to awaken till they feel the mild and reanimating heat of the sun communicate vitality to their system. The long night of winter steals upon us unexpectedly in the midst of our occupations, and interrupts our labours; and here we may perceive a lively image of the night of death, which often arrives when least expected and when least wished for. In the midst of a thousand projects and schemes of future felicity and of future grandeur, when perhaps on the eve of some great and important transaction, the cold hand of death presses on our eye-lids, and they are for ever sealed with darkness: when this solemn period shall arrive, may the thoughts and the actions in which we are at that instant engaged, bear the torch of truth to be applied; and may we not shrink from the trial! Thus we may continually derive the most useful and beneficial reflections from the changes effected by winter; and let us not fear often to contemplate those images of death, from which we may gain many essential advantages. Let us make ourselves familiar with the idea of our latter end, and let it in every situation of life come home to our hearts: we shall then be able to receive the awful messenger without dread: it will be a consolation to us in misfortune, a friend and faithful counsellor in prosperity, and a shield against every temptation.

FEBRUARY XIX.

Principle of Combustion generally diffused throughout Nature.

DURING the long nights of winter, when the cold is intense, fire is a benefit which we cannot too highly prize or gratefully acknowledge. How comfortless and miserable we should be if combustible matters were not abundantly diffused through nature! They are contained in sulphur, in animal fat, in oils, in wax, in vegetables, in bitumens, &c. And though these substances appear inactive, no sooner are they ignited than they evince abundant activity and motion. Ignition may be performed by the collision of bodies having proper access to the air; thus with a flint and steel striking against each other sparks are produced; and this is the ordinary way in which the fire we use for domestic purposes is obtained. But we are satisfied with enjoying the continual services that this element performs, without troubling ourselves to enquire how it is produced. If we were more attentive to the causes of certain natural pheonomena, we should every-where find proofs of infinite wisdom and goodness. With the most beneficial views God has diffused throughout nature the principle of combustion in such a variety of substances, that we can convert it to all kinds of uses, and enjoy its useful power upon every occasion. Happy should we be if we only accustomed ourselves to pay more attention to the benefits we daily receive from the bountiful hand of God! But I fear it is their constant occurrence which renders us callous and indifferent to such high marks of Divine Favour. And yet the proofs that we daily receive of the goodness of God are those which we can least of all pass by; they are such as most peculiarly deserve to be acknowledged with joy and unceasing gratitude. Let us then often reflect upon our wise and merciful Creator, and whilst we rejoice in his blessings, let us not forget the source from whence they flow, nor cease to remember that by again dispensing to less fortunate beings those benefits the goodness of God has enabled us to obtain, we most effectually render our gratitude acceptable to the Lord.

FEBRUARY XX.

Equal Distribution of the Seasons.

THOUGH the rays of the sun now fall obliquely upon our part of the earth, and all our fields are under the influence of freezing winds, there are countries which enjoy all the youth of spring; others, where the rich harvest repays the toiling husbandmen; and others, where the autumnal fruits luxuriate. So equally has Divine Wisdom regulated the revolutions of the seasons, and distributed to all his creation, at different seasons, the same blessings. His heavenly love is extended alike to all the beings which he has created, without regard to any particular country or people; it is sufficient for him that they require his assistance. The rays of his goodness shine upon the deserts of Arabia, as well as on the smiling plains of Europe; and either pole confesses his Divine Regard. But if God has so equally distributed the blessings of this life, some will be ready to ask why certain countries are deprived of the charms of spring, whilst others are so abundantly favoured? 'Why the sun's rays are diffused so partially, that in some climates the nights as well as days continue for months? And why, towards the poles, the countries covered with ice are not as beautiful and fertile as our plains and valleys? But who are you who presume to ask such questions? What right have you to call the Infinite God to an account for the manner in which he regulates the world? Ye proud and presumptuous men, learn humility, and acknowledge the traces of Supreme Wisdom in those things which your want of intelligence makes appear a fault. Perhaps you imagine that Providence has refused to certain parts of the earth the advantages and the enjoyments which are lavished, with a profuse hand, upon other more favoured climes. Such a supposition may accord with the confined views which some people take of nature; but they who are in the habit of grasping at a whole, and not resting content with a partial view of things, perceive and know that God has given to each country all that is requisite for the life, support, and happiness of its inhabitants. Every thing is arranged in the climate where they live according to their wants, and in a manner the best calculated for their preservation.

The length of the day varies in different parts of the globe, according to certain rules; there is scarcely an inhabited country which the sun favours with his presence longer than another, only the times in which he is visible are different. The inhabitants of the torrid zone enjoy days and nights of an equal length, whilst those of the contiguous zones have this equality only twice in the year. Though the sun, by his annual course, gives winter to one country whilst another enjoys summer, he never fails to return again to impart his blessings; and if, during our winter, the days are not so long as the nights, the summer amply compensates for the difference: and though the inhabitants of the frigid zone are deprived of the sun's light for several months, they afterwards enjoy it for months together; vegetation is rapid; and in the absence of the sun they enjoy a long twilight.

Where then is the country which does not receive the marks of Divine Love? or the region in which the traces of a merciful Creator may not be discovered? Where is the being which does not experience the goodness of God in every season? or which does not rejoice to live under his dominion; and whose heart does not overflow with joy and gratitude for the numberless blessings shed abroad on the face of the earth? May we more and more feel our minds enlarged and our hearts warmed with that pure and heavenly love which the all-bounteous God of nature has for the works of his creation! May this happy feeling be the portion of every individual! And may we ever be found amongst the number of those who endeavour to know the Almighty, by imitating, to the utmost of their ability, in love, in virtue, and in true charity, the example of Him, whose sun shines upon the poor as well as on the rich—on the guilty as upon the innocent!

FEBRUARY XXI.

Utility of our Senses considered.

MAN is possessed of senses, through the medium of which he may acquire information and ideas of surrounding objects. Our eyes enable us to perceive different objects by the rays of light being reflected from them: by this means also we become acquainted with the difference of colours; by our ears we know the different sounds which vibrate on the air; by the senses of taste and smell different odours and properties of bodies become known to us; and by the sense of feeling we receive the sensations of hot and cold, of wet and dry, of hard and soft, &c. How miserable should we be if deprived of these senses! If bereft of sight, how should we be preserved from the dangers which surround us, or be able to provide for our support? We should no longer derive pleasure and improvement from contemplating the grand spectacle of the heavens, the beauties of the country, or the great objects of nature; and the delight we receive from the presence of our fellow-creatures, particularly of those whose mind-illumined face displays the culture of their souls, would cease. Without the sense of hearing we could not enjoy the reciprocal communication of thought; nor be rapt into oblivion of care by the soothing sounds of plaintive melody, or excited to joy and to pleasure by more jocund strains. Without taste and smell we should be deprived of a thousand agreeable sensations, and should be subject to numerous inconveniences; and without the sense of feeling we should be rendered incapable of arriving at any degree of perfection in the arts, or of providing for our necessities. We cannot then too much rejoice and bless God that we are enabled to see, hear, feel, and speak.

Let us then adore our Creator, and acknowledge and celebrate his goodness; let us offer up songs of joy and hymns of glory and of thanksgiving to the immortal God, and let our ears attentively listen to the harmonious voice of myriads chanting his praise. May we never despise or abuse the value of our senses, which have all been given us for the noblest purposes! How we should dishonour the liberal bounty of Heaven and the admirable structure of our body, if we only employed our senses in the pursuit of vain pleasures, or in the gratification of sensuality! Wretched and contemptible indeed is the man who has no higher delight, no more exalted feelings, than in sensual enjoyment; who is unacquainted with the exhaustless treasures of a cultivated mind!

The period will arrive when the pleasures of sense must cease, when the eye can no longer be gratified with the views of nature, the ear no longer receive the soft sounds of the flute, nor the taste be susceptible of its accustomed sensations. The time will arrive when all outward objects will no more interest or make any impression on the senses. How miserable then will be the lot of those who have basked in the sun during their youth, given themselves up to every species of sensual gratification, and neglected to prepare, by cultivating their minds, for the evil day, when their feeble and emaciated bodies are sinking beneath a load of infirmities, and when they will have nothing to rouse their mental energies, which have long since been annihilated, nothing to cheer and encourage their drooping spirits, nothing to satisfy their impotent desires. May we ever be enabled, through Divine Favour, to make a proper use of our senses, and never lose sight of the great end for which we were created! Let us commiserate the condition of those unfortunate beings who are defective in their senses, and do all in our power to render their existence easy and comfortable; and by such conduct we shall best show our gratitude for the superior perfection we are blessed with.

FEBRUARY XXII.

The Soul becomes elevated by reflecting upon God.

When we give up our hearts to God, we begin to answer the end for which we were created, and enjoy a portion of that felicity which is reserved for the blessed in Heaven. How contemptible and insignificant are all the amusements of the world, when our hearts have been rejoiced and ameliorated, and our minds expanded, by reflecting upon God and Christ Jesus! When I compare my imperfections and inability with the infinite majesty of God, how little and humble I appear; how my pride is lost and confounded in the infinity of Divine Perfection! and how I long for the glorious period when I shall be more nearly acquainted with the everlasting God! But am I sufficiently impressed with the inestimable advantages which the frequent reflection upon God will produce, in order to give me firmness to employ myself in such a pleasing duty as often as I am required?

Alas! instead of filling my mind with this great and sublime object, my thoughts too often ramble upon trivial and perishable subjects: instead of fixing my desires upon the meditation of Divine Wisdom; instead of loving and cherishing the bright essence and power of this Eternal Being, which unites every thing that is good, great, and amiable, and alone can make me happy; I perhaps feel no pleasure but in the gratification of my senses; my affections are placed on terrestrial objects, and I only love those things which are perishable, and which cannot contribute to my happiness. May my past experience render me more wise in future! Till now, I have only loved and set my heart upon temporal things, which are still more uncertain and perishable than myself.

But at present, through the grace of God, my eyes are opened; I perceive a Being which has raised me up out of nothing, which has given me a soul whose desires cannot rest short of eternity—a Being in whom every perfection and virtue are united, and to whom I will consecrate my heart, and devote myself for ever, without reserve, and from whom I will ever receive all my consolation and delight. I will exchange those earthly enjoyments, which I have hitherto preferred to the blessings of Heaven, for advantages incomparably more real and permanently substantial. And though I still continue to make a proper use of the good things of this life, they shall never make me forget the love of God; but whilst I use them, and whilst I feel myself benefited by their good effects, when not abused, they shall serve as a constant memorial of the goodness of God, and call forth my acknowledgments and grateful sense of his kind care and solicitude for my welfare. Whenever I partake of any outward good, I will say to myself, If I find so much sweetness in the enjoyment of earthly things, and being only acquainted with a very small part of the works of God, that knowledge is so delightful, how happy and glorious will be my state when initiated into the mysteries of Heaven, and favoured with a portion of the purity and perfections of God! How great is the felicity of the saints, who see him as he is, and live in the constant participation of his Divine Communion!

If those pleasures which can only be enjoyed through the medium of a frail and perishing body, have the power of so agreeably affecting my mind, what must be its delight and ecstacy when, divested of all its fetters and impediments, it has winged its flight to the regions of bliss, and uninterruptedly enjoys the pleasure arising from its own workings; never wearied with thinking, nor injured by incessant action; but ever employed upon the sublimest images in the presence of the immortal God! If the gentle rivulets that so beautifully irrigate the earth are so pleasing, if a ray of light is so vivifying, how admirable must be the great Source and First Cause of the torrent of the rivers, the Living Fountain of all joy and excellence! how gloriously pre-eminent the Author of the blessed sun, the rays of which only have such great power!

From what we already know of God through his works, we may form some anticipation of the glory of futurity, and prepare with joy and with gladness for the happy moment, when the soul, released from its present dark and inferior abode, shall ascend into the heavens, and enjoy that purity and exaltation, the reward of those who, by the proper use they have made of their time here, are permitted to join the heavenly choir of angels in songs of ecstacy round the throne of the everlasting God.

FEBRUARY XXIII.

Causes of the Vicissitudes of Heat and Cold.

What occasions the transition from extreme heat to intense cold? By what means does Nature effect these vicissitudes? It is certain that in winter the state of temperature principally depends upon the sun; for when our globe in its annual course round that luminary is so situated that its northern hemisphere is turned away from the sun, when the rays fall obliquely upon the earth's surface, and when the sun remains only a few hours above our horizon, it is impossible that its rays can be so powerful as when they fall more perpendicularly. But the heat does not entirely depend upon the distance and situation of the sun, which annually passes through the same constellations, and is not more distant in one winter than in another, yet the degree of cold varies very much in different winters. Sometimes a great part of the winter is as mild as autumn, whilst in another the deepest rivers are frozen, and men and animals are scarcely preserved from the effects of the cold. Even in those countries where the days and nights, during most part of the year, are of an equal length, the heat of the sun is too feeble to melt the ice and the snow on the summit of the mountains. On their heights reigns an eternal winter, whilst at their base, verdure flourishes and summer smiles; yet the rays of the sun fall upon their ridge as well as in the valleys. From these circumstances it would seem as if the sun was not the only cause of heat, otherwise these phenomena would be inexplicable.

Nature is rich in resources, and a thousand causes of which we are ignorant may assist her operations. We know that the winds and the atmosphere have a great influence upon the heat and cold of a country.

Hence it sometimes happens, in the midst of summer, when the atmosphere is charged with vapours, the heavens are obscured by thick clouds, and the north wind blows, that great cold is felt; and on the contrary in winter, when the wind is from the south, the temperature is often much milder. The peculiar nature of the soil may have some effect; and the winds blowing over the ocean acquire a higher temperature, which they impart to the earth as they sweep over its surface.

These causes, and, perhaps, many others we do not yet know, influence the temperature of the air, and produce the sudden alternations of heat and cold. In most of our investigations of nature we are obliged to stop short of the truth; and the most able philosophers have not been ashamed to confess how little they knew of her laws. We can comprehend but a very small part of her operations, and no doubt it is from the wisest reasons the Creator has concealed from our penetration the causes of so many effects which we view with wonder throughout the kingdom of Nature; but we know enough of them to be happy, wise, and content: let us endeavour to use, with propriety, the little knowledge we are permitted to acquire, and convert it to the advantage of our fellow-creatures, and the glory of God; for surely he did not give us our faculties to be buried in sloth and indolence, nor to be employed in trifling pursuits, or to become obliterated or perverted for want of cultivation and exertion.

FEBRUARY XXIV.

Singularities in the Mineral Kingdom.

From the limited nature of our understanding, it would be difficult, if not impossible, for us to comprehend, at once, the whole kingdom of Nature, and to know and distinguish all the properties and qualities of her productions. We shall be facilitated in our search, and assisted in our enquiry, into Nature, if we begin by the consideration of some simple and detached objects, whose beauties will engage our attention, and whose peculiar phenomena will solicit our regard. At present, then, I shall consider some curiosities met with in the mineral kingdom, amongst which none are more remarkable than the Magnet. When suspended, one of its extremities points to the north, the other to the south; these are called its poles, and they seem to contain the magnetic principle in greater abundance than the other parts. It does not appear to attract any other substance than iron, or the ores of iron: if you place the north pole of one magnet opposite the south pole of another, they will be mutually attracted; but if their similar poles, whether the two north or the two south poles, are placed together, they repel each other.*

Mercury offers to our consideration properties equally remarkable, and more useful. It is distinguished from all other metals by its fluidity, but it becomes solid when exposed to a sufficient degree of cold. In a heat of 600° it boils, and may be totally evaporated; exposed to the air and agitated, it attracts a portion of oxygen, and is converted into a powder called oxide, which is black, yellow, and red, according as the oxygen is in greater or less proportion. By the application of heat the oxygen may be extricated from the oxide, and the mercury again assume its original form.

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* The magnet does not appear to be a stone, as the author has represented, but iron only, or iron contained in stone, modified in such a manner as to admit the passage of the magnetic fluid; of which little is known, though some suppose it to be a modification of the electric power: to support which they assert, that iron long placed in an elevated position becomes magnetic; that instruments of iron struck with lightning are sometimes magnetised, and that two pieces of iron may be magnetised by rubbing them against each other in the same direction. But supposing it was the electric fluid undergoing a peculiar change in the iron, we are still no nearer the moon; for we are equally in the dark respecting the nature of an electric as of a magnetic fluid. It is their effects only with which we are acquainted.—E.

Gold is the most precious and valuable of all metals, not only by its scarcity, but from its admirable properties. No other substance equals it in ductility and maleability. It may be beaten out into leaves so thin that one single grain of solid gold may be made to cover 56¾ square inches, the leaf being only $\frac{1}{352000}$ part of an inch thick; and an ounce of gold upon a silver wire is capable of being extended 1300 miles in length. It requires a very strong heat to melt it.

The curious crystals of salt; the peculiar brilliancy of some stones; the great variety of metals; petrified bodies found sometimes in the highest mountains; and a thousand more wonders contained in the mineral kingdom, are well calculated to awaken our curiosity and to excite our astonishment. No pursuit is more gratifying and delightful, or more diversified, than the attentive contemplation of nature. Though we were to live for ages upon the earth, and employed every day and every hour in studying and investigating the phenomena and peculiarities of the mineral kingdom only, there would still remain a thousand things which we could not explain, but which, concealed from our penetration, would still more and more excite our curiosity. Let us then lose no time in entering such a wide field of discovery; let us employ a part of the time we can spare from our indispensable duties and avocations in observing nature, by which our mind will become improved, our knowledge increased, and we shall be rewarded with a very innocent and durable pleasure. The more we meditate upon the designs of God in his works, the more will our satisfaction increase, inasmuch as the objects of nature are infinitely more sublime and wonderful than the choicest productions of human genius.

FEBRUARY XXV.

God's Love for Man daily manifested.

To enumerate all the blessings which the mercy of God has bestowed upon us from the first moment of our existence to the present period, would be as impossible as to stand upon an eminence and count the stars of heaven. How many benefits have we received in our infancy, which are now entirely forgotten? From how many dangers, open or concealed, have we been delivered! From how many impending evils have we escaped; and how often has God provided for our wants, and confounded the incredulity of those who regarded assistance as hopeless! Each day of our lives adds to the sum of the favours we have received. Each time that the sun illumines the eastern horizon, and that his departing beams leave a radiance of glory in the west, the goodness of God is manifested. And what greater and more striking proofs can we have of his Divine Love, than our being redeemed through the sufferings of Jesus Christ! that we have the holy scriptures of truth to point out those certain rules, which lead to life and to happiness! and that from our earliest infancy we are permitted to imbibe the pure principles of Christianity, safe from the machinations of bigotry and the terrors of persecution!

From these considerations, it will appear to be wholly impossible to number the blessings we receive from God. Let us confine ourselves to a single day, and endeavour to compute the mercies we receive in that short space: light, air, food, strength, a habitation, and friends, amusements and pleasures, and the renewed powers and activity of the mind, with a thousand others each individual may enumerate.* May our minds be impressed, and our hearts softened, by these daily instances of God's love; and by frequently meditating upon them, may our gratitude be elicited, and our virtue strengthened and improved! The more we employ ourselves in such reflections, the more we shall be disposed to reverence the power of the Almighty, and be delighted in celebrating his praise.

FEBRUARY XXVI.

Tranquillity of the Night.

The care of Providence to secure our repose during the absence of day claims the utmost gratitude and admiration. When night spreads her sable mantle over the earth, an universal stillness reigns, and announces to all creatures a cessation from their toils, and invites them to soft repose. To aid this general calm, nature suspends the action of those things which, by their vivid impression, would interrupt its duration. Animals, whose restless activity might disturb our sleep, have themselves need of repose; the birds retire to their nests, and the domestic animals sleep around us.

But this dead calm is not alike agreeable to all; for many who, from pain, sickness, and various causes, pass their nights in dreary watchfulness, oppressed with care, no sooner lie down, than, preyed upon by distracting thoughts, their sufferings and their troubles seem to augment in proportion as every thing is tranquil around them: they count the hours as they slowly pass, and the time drags heavily till the first streaks of morning break, and the cheering rays of the sun restore to them the presence of pleasurable objects, and the intercourse of their friends. The number of these victims of disease and mental distraction are few compared with the great mass of mankind, whom health of body, ensured by temperance, and peace of soul, obtained by good works, always procure sweet and uninterrupted slumbers. After the fatigues of the day, we hail the approach of evening with pleasure; and as the gloom thickens, and spreads a deeper shade, we feel the influence of sleep gradually diffused over our frame, and, stretched along at ease on the downy couch, soon confess its grateful power. But how often does man break in upon the midnight hour, and disturb the general calm of nature! The tumultuous uproar of the drunkard, and the wild levity of the libertine, often trouble the repose of the peaceable, and interrupt their slumbers. Can these thoughtless beings ever reflect upon their general disturbance of the peace, or have any respect for the ordinances of God? At the very hour of their heedless noise, and riotous mirth, they are, perhaps, rendering more distracted the last moments of some poor helpless creature that imagines a short repose might ease its agony, or they break the slight repose of some unfortunate person who has long solicited it in vain. "How happy are the true believers, who have passed through the sleep of death to their God! They are released from all the miseries and vexations of a life passed in continual dangers and alarms, and their repose is no longer disturbed by numberless pains and anxieties! Freed from all misery, their souls no more shall be oppressed by grief, nor their joy be exchanged for sorrow and bitterness; but blessed in the Lord, their peace shall be perfect."

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* The author calculates that "we receive from God 12 blessings every minute relative to respiration; 30 relative to our understanding and will; and 6000 relative to the different parts of our bodies; consequently God grants us, each minute, 6942 blessings, and 362,520 every hour of life."

FEBRUARY XXVII.

Winter is an Emblem of Life.

DURING the winter days we experience a continued succession of vicissitudes; flakes of snow, showers of rain, clouds and sunshine, storms and calms, quickly follow each other. Scarcely has the snow enveloped nature in its pure veil, when it vanishes from our view; and scarcely does the sun reveal his splendour, when he becomes obscured by the dark clouds. So in the moral world we witness as frequent variations. If, during winter, many days are dark, gloomy, and dull, so also are many of the scenes of life; and as storms and darkness are necessary and conformable to the wise laws of nature, so also adversity will strengthen the mind, and render better the heart of man.

Who can prevent the day from being darkened by clouds, or our happiness from being the sport of contingencies, and at the mercy of other men? It is as impossible for our souls to enjoy an uninterrupted calm, as for the face of the heavens to be continually smooth and serene; and as impossible for our frame to be free from pains and accidents, as for the air to remain always destitute of clouds. Passions which often produce good effects will, likewise, sometimes occasion the most fatal consequences, and may be justly compared to the storms and tempests which perturb the face of nature. And as the winter is a source of fertility to the earth, so the afflictions and hard treatment we sometimes experience may be a means of increasing our wisdom and our virtues. Darkness teaches us how to esteem and value the presence of light, the continued brightness of which would dazzle and fatigue our sight; and a fine serene day never gives us more pleasure than when it is preceded by gloomy and tempestuous weather. Neither should we be so sensible of the blessings of health if we had not learned its value by painful experience.

We are in general too apt to exaggerate our evils, and magnify our sufferings; the events of the world, and the accidents of life, are rarely so lamentable, as in the gloominess of our thoughts, and the ardency of our imagination, we represent them. We are so blinded by pride, self-love, and affectation, that we consider every little evil that befals us as of the first consequence; whilst we never think of the many advantages and comforts with which we are favoured, and which far exceed the trifling inconveniences we may suffer. Even what we regard as the greatest evils may be converted to our ultimate gain, if we conform ourselves to the views of Divine Wisdom. Do we not see the snow, the tempests, the winds, and the frost, and all the changes of the season, are the means which God uses to grant new favours? When the sky has long been lowering, and the clouds gather thick, when the storm and the tempest have threatened, how soon has light been restored to the heavens, and joy and gladness again smiled on the earth! The heavier the showers are, the sooner the clouds are drained; the more intense the darkness, the greater is the pleasure when the sun restores the day. Adversity only fills up a part of our life, and often when the storm threatens to break over our heads we are going to be relieved from our trouble.

Let us therefore bow without murmuring to the dispensations of Providence, and cheerfully submit to the evils we cannot avoid: if it please the Almighty Disposer of events that our path through life shall be dark, with few rays of comfort and of happiness to cheer us on our gloomy way, let us not repine; but steadily hold on our course, unmoved by the laugh, the scorn, and the censure of the world, as the rock rears its head above the waves, and remains regardless of their idle foaming, whilst the storm rages around.

FEBRUARY XXVIII.

The Utility of Mountains.

Would it be more advantageous to our globe if the surface were more even, and not subject to so many inequalities? If the superfices of the earth had been smoother, so as to form one vast extended plain, might not our sight have reached farther, and our travelling from place to place been more facilitated, besides many other advantages which we should have experienced? These are important questions, and deserve our serious consideration: let us now, therefore, see whether we have any cause to be discontented with the present arrangement of our globe.

From mountains and hills flow innumerable springs, which uniting form vast lakes and rivers. Those immense chains of mountains which extend from east to west, traversing a great extent of country, are supposed to condense into water the moist exhalations from the earth, and thus prevent their being dissipated: from the summits of the mountains there is thus a perpetual supply of streams, which descend to irrigate and fertilise the valleys below.

Besides their being the source of fountains and rivulets, they are also of great use in being the abode and shelter of many animals which are of great advantage and service to man. They supply, without its costing us any labour, food and support to many animals which we esteem both for their flesh and their skins. Upon the sides of mountains grow and flourish trees, plants, and a variety of herbs and salutary roots, which cannot be so well cultivated in the plains. Within their bosom, also, are contained various metals and minerals; and mountains are highly useful in sheltering us from the cold piercing blast of the north and east winds; and to many countries they are more effectual and durable barriers against the inroads of hostile nations than the strongest ramparts and most powerful engines of war; and they are, at the same time, the most sure bulwarks against the ravages of the sea, the inundation of floods, and the devastation of the winds.

They form the most grand and striking objects of nature; for who can contemplate the Alps, the Cordeliers, and the Andes, without feeling emotions of sublimity? or view, without astonishment and rapture, Plinlimmon and Benlomond, whose summits are lost in the clouds? It is true that some mountains, such as Ætna and Vesuvius, are terrible from their explosions, and dreadful from the materials they contain; causing horrible shakings of the earth, and hurling fire and destruction far around. But as we have reason to believe this partial evil is for the general good and advantage of man, we have no cause to complain of this peculiar arrangement of the earth.

Mountains then, we find, are essential to the due preservation of the earth; procure us numberless advantages; and display, equally with the rest of the creation, the wisdom, power, and goodness of God. On the heights, as well as in the depths; on the mountains, and in the valleys; above the earth, as well as beneath it; the Lord manifests himself the benefactor of his creatures, and gives occasion to bless and celebrate his name for ever and ever.

STURM'S REFLECTIONS

Ye who adore with me the Lord by whom the heavens and the earth were made, come and rejoice in his works. May 1st.

MARCH I.

Powers of the Mind enlarged by contemplating God in the Works of Nature.

LET those who wish to worship the God that made the heavens and the earth, go forth and view his works, and see, and acknowledge with gratitude, the wonders he has wrought. Of all the species of knowledge we can acquire, none is more important, more agreeable, or more interesting, than that we gain from studying the works of nature; and, properly to answer the great end for which we were created, it is essential to become acquainted with the Divinity by considering his works: it will ensure us present as well as future felicity. It is certainly right to seek for a knowledge of God, as revealed in his Divine Word; but we shall scarcely embrace, with full conviction of heart, such a revelation, if we do not join to it that other revelation by which he is manifested to us in nature as the Creator of all things, and as the common Father, Lord, and Benefactor of the creation. And we find our blessed Lord and Saviour Jesus Christ, when opening to his disciples the great truths of religion, often made mention of the works of nature, and conducted his hearers from a consideration of the subjects which the moral and the physical world present to the meditation of things spiritual and heavenly.

The frequent study of the great volume of nature is sufficiently noble, and worthy the attention of man; by it we learn those truths which declare to us the immense grandeur and glorious attributes of God; we are taught to know, and properly estimate, our own limited powers and faculties, and become better acquainted with the obligations we owe for the blessings we receive. Those who despise this study, and think it beneath their notice, only draw down upon themselves shame and disgrace, and deserve the compassion of their fellow-creatures. The advantages of reason are never more felt than when our faculties are employed in meditating upon the perfection of God displayed in his works: never does the mind so expand, and the imagination take such bold flights, as when, ranging abroad through nature, we view her works, whether the constellations and the luminaries of the heavens; the hills, and the distant mountains; the wide-extended valleys, the groves, and the meandering streams; or listening to the sighing of the wind, or the hoarser cadence of the swelling wave, now foaming beneath the hoar cliff, or vainly breaking against the rock, whose dusky top sullenly peers above the spray: and, glowing with rapture, our soul then feels there is something more than all this; sensations arise too sublime for utterance, and we are immediately brought as into the presence of God: all meaner things, in those glorious moments of true delight, find no place in our bosom, which is filled with ecstacy and inexpressible felicity. These joys are not like the pleasures of the world, fleeting and transitory, but they are ever fresh and ever young; they never disgust with satiety, nor weary with reiteration: and when retired to our habitations, the mind formed for greatness, instead of being occupied with the trifles and frivolities of the day, looks back with fond delight upon the past scenes, which the imagination depicts in the purest and most glowing colours; and, safe from the dangers of his voyage, the traveller remembers the objects which once forcibly arrested his attention.

We cannot long be in the habit of thus exercising our faculties without their being much benefited and improved: whatever calls forth the powers of the mind tends to elevate and enlarge its capacity and nothing contributes more to this noble purpose than the study of nature and of God: from our imagination we receive our greatest pleasures, and it never takes higher nor more brilliant flights than when ranging through nature; but we have reason to believe, that the power we are permitted to enjoy of obtaining a degree of pure happiness here is not to be annihilated or lessened when the soul is released from those incumbrances which now so much shackle and retard her advancement in wisdom and in perfection; but that this kind of pleasure and true enjoyment will be continued in a future state: and he who has most cultivated the faculties of his mind and cherished the virtues of his heart will have these capacities increased according to his desert in the world to come, where we are told, in the language of Scripture, saints and angels of light continually remain in the presence of God, and are never weary [illegible] contemplating his glory and hymning his praises. And such even in this world is the reward of those who are continually reflecting upon the Almighty power, as manifested in his works.

MARCH II.

Unpleasant Weather.

Nature is still drooping; deprived of her beauties, her aspect seems wild and dreary; the sky is obscured with clouds, and the atmosphere loaded with vapours. A thick fog conceals the morning sun from our view, and prevents our receiving his salutary influence; his warmth is feeble, and scarcely a solitary herb peeps above the ground; all is dull, lifeless, and without charms. Some will be ready to exclaim, When will the lovely spring appear? When will those happy days arrive when the first flowers shall invite us forth into the fields and the gardens? But let us remember that before these pleasing effects can take place, such a state as we now experience must occur. Such is the plan of nature, that without these days, which we think so disagreeable, all our hopes of summer must vanish. Storms and tempests are beneficial, and frosts ultimately tend to fertilise the earth. If the air was now mild and more temperate, millions of insects would be generated, to the great injury of the seed which is sown, and the plants ready to bud. And if the weather should now be mild, and blossoms be put forth, how they would suffer should a frost return to nip the tender shoots!

Yet such is our blind obstinacy, that we murmur against God when we ought to adore and to bless him; and we set down for imperfect what should make us acknowledge the wisdom and goodness of the Creator. In short, we know not what we ask, nor what we desire; and it would be a sufficient punishment if all our prayers were to be granted. It is for the wisest purposes that the approaches of spring are gradual. The frequent rough and boisterous weather of March is generally the last remains of winter, prepares us for the enjoyment of finer days, and is the forerunner of the delightful verdure which the spring spreads over our fields. Therefore, O my God, will I continue to exalt and to bless thee. In these stormy days I will be more and more convinced that thy government is wise, and thy arrangements of nature just and beneficial; and that in all times and in all seasons, in storms and in calms, in the rain and in the snow, equally as in the finest weather, thou art still my Father, Preserver, and Benefactor.

MARCH III.

State of certain Birds and Animals during the Winter.

At present we do not see any of those insects and birds which, during the summer, float by millions in the air and in the water, or rest upon the earth and among the groves. Of the birds, some species at the approach of winter disappear, and retire to climes of a higher temperature, where they can find shelter and nourishment. The first stormy day is the signal for departure; when, quitting their abodes, they assemble, and prepare to wing their flight to far distant countries. Nor do those that remain behind perish; they continue through the rigours of the season. The bodies of some animals are so formed, that the same causes which deprive them of their food occasion such a change in their system, that they do not require any aliment: the cold affects them to such a degree that they become torpid, and seem as if wrapped in the profoundest sleep, which continues 'till returning warmth opens the earth, and it again brings forth fruits; when they awaken from their slumbers, and, as the spring advances, leave their retreats in the sands, in holes of the earth, the hollow trunks of trees, marshes, and various other places that have sheltered and protected them in their death-like state during the winter.

How admirable is the wisdom of God, whose tender cares extend to the least of his creatures! He has endowed each of them with an astonishing instinct, which enables them to continue and to preserve their existence; teaches them the day when they are to abandon their summer abodes, and pass the time of our winter in more genial climes; and directs them in their dangerous flight. To others it points out the places where they may pass their time of torpescence in safety; and when the warm beams of the sun descend with sufficient force, they come forth unhurt.

Each time that I reflect upon these changes, I am induced to think of what will happen to myself at the hour of death; when in that solemn moment I shall leave my habitation, my dearest friends, and all my pleasures, to pass into another state of existence. The changes that these animals undergo offer me another edifying reflection. I see how God watches over the smallest link in the vast catenation of beings; I see with what paternal care he provides for the support and preservation of the weakest and most insignificant creatures; and would it not be inconsistent with my ideas of his wisdom and bounty to imagine that he would have less regard and solicitude for my welfare and conservation, whom he had been pleased to create so much superior; Surely that God which clothes and nourishes the insects and the birds, which provides them with retreats and places of repose in the holes of the earth and in the clefts of rocks, and guides their course to distant countries, will never abandon me in the time of want and of danger, nor forsake me in the hour of my affliction and distress.

MARCH IV.

Winds and Tempests.

How violently the air is agitated! Hark, how the wind whistles above, and now swells in a louder blast! See, how the dark clouds gather, and then whirl along with fearful swiftness! The uplifted oak strews the ground, which shakes as it falls; and see those wretched huts borne aloft by the blast, their scattered [illegible]ents tossing in giddy eddies! The clouds open, and deluge the earth with the descending torrent. Perhaps at this moment some luckless bark is riding in the storm at the mercy of the winds: above, the loud blast roars, and all around is darkness; the waves now meet the clouds, then roll back, and discover the gulph threatening instant destruction. The fear-struck mariners have now no hopes; they think of their far-distant homes, and with wild horror view the wave, in which, as it rolls on like a vast mountain, they read their final doom. But why does the beneficent Creator thus permit the winds to track their course over the seas and the earth with desolation and destruction? Mad question! Who has the temerity and the arrogance to dare to censure and pronounce judgment upon the Almighty, or to question his proceedings? Let us rather consider his ways in silence, and feel persuaded, from what we know of him, that they are always beneficial.

Though the tempest and the whirlwind often speak in terror, and shake the earth; though they cause devastation, and make the ships on the seas to be splintered against the rocks or entombed in the deep; though houses are overthrown, and men and animals are swept away; still we have no right to arraign the decrees of Providence, which are written in wisdom and uttered in mercy. These storms and tempests are to answer great and important purposes in nature. At the return of spring, a humid and mild air softens the earth, which, during the winter, had remained hardened. By this change of temperature the atmosphere often becomes charged with noxious vapours, and plagues and contagion might destroy men and animals, if these violent agitations of the air did not render it more pure and salubrious.

Thus we find the Almighty, whether he visits us in tempests, or smiles upon us in serenity, is alike the Father and Benefactor of the creation; and every time we hear the winds blow over our heads let us acknowledge his goodness, and reflect with gratitude on the wisdom of his government. The Lord taketh the winds from the four corners of Heaven, and bringeth them from the extremities of the earth; he marketh out the paths through which they should proceed, regulates their boundaries, and bids them to cease when they have fulfilled his purpose. Why then should we fear or be troubled when his messengers execute his commands? Though the tempest should howl around me, the earth tremble, the rocks be rent in twain, and darkness obscure the face of nature, I will not be disturbed, neither will I be terrified; but I will put my trust in the Lord, and rest my cares upon the bosom of Him who rules and governs the universe, who directeth the winds, and pointeth out to the stars their course.

MARCH V.

Aurora Borealis.

SOMETIMES in winter, and towards the vernal equinox, we observe in the heavens a sort of transparent, luminous, and diversely-coloured clouds. A brilliant light appears from the north, which is gradually communicated to the other clouds, till at length rays of pale light shoot from these northern clouds towards the zenith. This aerial phenomenon, called Northern Lights, or Aurora Borealis, may be classed amongst those natural effects the true cause of which we do not exactly know. Some naturalists have supposed it to be a magnetic matter, which, accumulating towards the north, becomes luminous. Ot[illegible]h greater probability, suppose it to be occasioned by the rays of light falling on clouds or mists, and thence reflected.

The uncertainty in which we are with respect to the cause of this phenomenon may be made useful to us. How many things do we not see in the heavens and on the earth which the greatest philosophers cannot explain? This ought to render us humble, and check that pride which is continually raising us in our own estimation, and teach us that many very inconsiderable things often confound the wisest amongst us in their investigations, and elude their most attentive research. There are innumerable objects that we acknowledge are arranged with wisdom, and perform the most useful offices, with whose true principles, end, and catenation with the material world, we are unacquainted. Happily this ignorance does not always affect our happiness; for though we cannot exactly determine the cause of the Aurora Borealis, our peace of mind is not therefore destroyed, nor our comforts diminished. And however ignorant we may be of that and much more, we are yet so far favoured as to know that all the phenomena of the physical as well as of the intellectual world proceed from an all-ruling Providence, which governs the universe with wisdom, and directs it with harmony and love. Those who rightly feel this truth will have sufficient cause to bless and to adore the Almighty, as well as objects enough to engage their attention and exercise their faculties during their short passage through this life. Let us be moreover thankful that we were not born in those ages when ignorance ruled and superstition triumphed; when, upon the appearance of such a phenomenon as we have just described, whole nations trembled and were thrown into consternation. This beautiful spectacle presented to their troubled imagination armies opposed to each other, and dreadful battles fought in the air; whence they prognosticated the greatest evils. The Aurora Borealis was to them the evil genius which proclaimed war, famine, and pestilence; and terror and dismay spread through the country.

MARCH VI.

Power of God displayed in the minutest Objects.

THE azure vault of heaven, the immensurability of space, the constellations in the firmament, the variety of creatures which inhabit the earth and fill the air and the waters, all display the glory and announce the infinite power of Almighty God. But it is not alone in the greatest objects of nature that we trace the wisdom of the Creator; it is equally conspicuous in the least of his works. A single grain of sand viewed through a glass which magnifies a million of times will excite the greatest astonishment; and who would not be surprised to discover that an insect lives within it?* Even in our own body we can discover objects inconceivably small and well deserving observation; every-where on the surface of the body are innumerable pores, a very small part of which can be discovered by the naked eye. The epidermis resembles the scales of a fish, and it is calculated that a grain of sand will cover 250 of these scales, and that one of these scales can cover 500 of the interstices or pores through which the insensible perspiration passes.

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* The author very gravely asserts, that "if you examine a crumb of mouldy bread through a glass which magnifies some millions of times, you will discover a thick forest of fruit-bearing trees, whose branches, leaves, and fruit, may be easily distinguished."—E.

Have you ever considered the wonderful structure of the hairs of your head? They are hollow tubes, each of which has a bulbous root, a marrowy substance, and connecting filaments. Every thing ought to convince us that there are thousands of objects in nature which are wrapt in mystery, and that we have many discoveries to make of things at present entirely unknown to us. There may be a thousand wonders in the formation of our body of which no person has yet thought, and which he would be far from suspecting; and there are some organs existing the use of which we do not yet know. And how many objects may there not be in nature, so minute, that the microscope cannot detect, nor the understanding conceive them; but which, if known, would furnish new proofs of the grandeur of God! The little that we do know is sufficient to convince us that his power, wisdom, and goodness, in small things as well as in great, are most admirably manifest.

The sands of the sea, as well as the expanse of heaven, the brilliancy of the stars, and the roaring of the tempest, declare the glory of the mighty God. The trees in the beauty of their foliage, and the least grain and seeds in their abundance, cry with one voice, It is God who hath made us, give all glory and honour to the Creator! And to him, and him only, ought we to give glory. The smallest of his creatures display his power: the structure of a fly is as curious as that of an elephant; a single blade of grass as that of the stately oak; and the formation of a grain of sand is as wonderful as that of a mountain. No creature that he has formed is unworthy our attention; those which we consider as the most despicable contain wonderful properties; and as God has condescended to create them, they are certainly worthy our esteem and regard.

MARCH VII.

The Effects of Winter gradually depart.

The same wisdom which, at the beginning of winter, caused the increase of cold to be gradual, now orders its departure so, that it diminishes by degrees, and the rigorous season insensibly verges towards an end. The sun remains longer above the horizon, and his rays act more powerfully upon the earth; flakes of snow no longer obscure the atmosphere, and the nights only produce a white frost, which vanishes before the noon-day sun. The sky becomes serene; the fogs and vapours either disperse or are converted into beneficial showers. The earth is rendered soft and pliable, and imbibes moisture; seeds begin to open out, branches which appeared dead put forth tender buds, and the blades of grass spring up out of the earth. We see nature universally preparing to restore verdure to the fields, leaves to the trees, and the long-lost flowers to the gardens. Notwithstanding the tempests, the hail, and the yet frosty nights, she is silently labouring to bring back the spring; she will soon put off her sad and gloomy aspect, and resume all her charms and fascinating beauties, laughing with youth and gaiety.

It is thus that all the changes in nature are gradually accomplished. Each effect that we perceive has been preceded by some exciting cause; a thousand circumstances which escape our notice succeed each other, until the great designs of Nature are completed. Many springs are put in motion before a single blade of grass can spring up, or one bud be unfolded. All those changes which have so unpleasantly affected us during the winter were necessary to ensure us the smiling prospect that so soon promises to open before our delighted view. Tempests, rains, frost, and snow, were requisite, that the earth might repose, or undergo that state by which its powers are renewed and its vigour repaired, to enable it to sustain a greater degree of fertilisation. Now that the advantages of these arrangements of nature begin to unfold, and we discover some of the ends they were destined to fulfil, we acknowledge their propriety, and the beneficial consequences of winter demonstrate to us its great utility to the earth.

As the seasons continually vary, so also do the periods and events of our lives continually change. In the life of each individual there is a catenation of causes and effects, which will remain wrapped in mystery, till eternity shall lift up the veil, and show why certain events were necessary and beneficial to our condition. Perhaps we are able to know why we happen to be born in a particular family, and in a certain place rather than another; why certain accidents have befallen us, or why we embraced some particular mode of life in preference to another: all which at first might be hidden from us; but now we comprehend that one action was a consequence of another, that the past was necessary for the present, and that many events which did not seem to accord with the plan of our lives were yet essential to the happiness we now enjoy. We are hourly approaching that period when all the events of our lives, and the secret springs and causes which operated to produce them, will be made known to us; and perhaps we are at this moment upon the eve of taking our flight for the regions of futurity, which, according to our deserts, will be happy or miserable. O God! influence my heart to believe, that so it may be filled with peace and joy; and when the visible creation shall depart from before my eyes, grant that I may enter into a blessed eternity; and permit me to enjoy such a foretaste of it as shall elevate my soul above every earthly and perishable thing!

MARCH VIII.

The external Parts of the Human Body.

While the beauty of nature is veiled, and the fields and the gardens have not yet gained those charms which fascinate and invite to enjoyment, let us consider the structure and formation of the human body, which will furnish ample cause for admiring the power and wisdom of God.

Amongst the most remarkable and conspicuous parts of the body, is the head, whether considered as to the beauty of its form and appearance, or as the supposed centre of sensation and seat of the mind. The organs of sight, of hearing, of smelling, and of tasting, are all placed in this wonderful part; and upon the face, where shines every beauty, all the movements of the heart, all the feelings, are pourtrayed; the secret sentiments of the mind are legible, and the passions of the soul displayed. The lips, as they move in smiles, or assist the tongue in giving harmony and diversity of tone to the voice; the teeth, as they add to the beauty of the countenance and divide and comminute the food; with the different glands in the mouth, which secrete the saliva so necessary to digestion; are all admirable and wonderfully formed. The head, from its peculiar articulation with the neck, is capable of turning in any direction; the shoulders are constructed in a manner which gives the greatest degree of strength of which a form like ours is capable; to them are attached the arms, and to these the hands, which are formed with exquisite wisdom; we are enabled to perform by their means an infinite variety of motions; their peculiar structure is one great cause of our superiority in the arts, and all their movements are facilitated by their numerous bones and joints.

The chest forms a bony cavity, in which the heart and lungs securely perform their functions. The diaphragm separates them from the abdomen, which contains the stomach, the liver, the spleen, the kidneys, and the intestines. All this [illegible] is supported by the hips and lower extremities, which have various joints to facilitate their motion; and lastly, the feet contribute very powerfully to this important purpose. The whole body is covered with skin, beneath which are muscles, with which we are enabled to perform our various motions; and we find, in some parts, a luxuriance of hair, which much adds to the beauty of the whole.

What a diversity we see in these different parts! and yet they are only some that are the most conspicuous, for there are many more equally essential. Their form, structure, order, situation, movements, and harmony, all display their divine origin. No part of the body is imperfect or useless, and the least alteration in its present organisation disturbs its regularity and interrupts its functions.

If we only consider the consequences of being deprived of our hands, or having them formed like the hoof of a horse, how helpless we should be, incapable even of providing for our most urgent necessities, we shall admire and rejoice in our present happy conformation. If we possessed the ratiocinative faculty with the form of some quadruped or reptile, how incapable should we be of exercising those arts and employments which we now perform! or had we, like the fabled Cyclops, but one eye placed in the middle of the forehead, how impossible to see objects on the right or on the left, and how confined would be our view! or if our ear was differently situated, how imperfectly we should distinguish sounds! We should be compleatly satisfied that the present organisation of our body is best adapted for our condition in life, and we should bow down with reverence and gratitude before the throne of the Almighty, who has thus so wonderfully formed us; who has given us senses, which, however excellent from nature, may all be improved by cultivation; and a mind, the expansibility of which seems to be unlimited. Seeing then that it depends upon ourselves whether our mind is to be luminous and our senses acute, or whether it is to be contracted and they brutified and callous, let us pray to the God of nature that we may never lose sight of these truths, nor ever neglect improving those talents which in his infinite mercy and condescension, he has entrusted to us. Let us take the greatest care and make the noblest use of our bodies, seeing, that after they shall have reposed a certain period in the grave, they will be, restored to us infinitely more glorious and perfect. It behoves us then not to dishonour a body which will be so illustrious in a future world, conformed to the glorified body of our Lord. Let the blessed and glorious hope of our future bliss, from this moment, animate us to dedicate our bodies to holiness, to regard them as the temple of the Deity, and preserve them pure and blameless till the glorious coming of Christ Jesus.

MARCH IX.

Hope of Spring.

Every day hastens the approach of spring, and our hearts begin to throb with the pleasurable hope of soon seeing the happy time arrive, when we can inhale the balmy breeze, and, walking forth into the fields, see all nature rejoice. This sweet expectation is one of the few which does not deceive, because it is founded on the invariable laws of nature. The charms of this fond hope are alike diffused through every pure heart: it is not the splendour of the purple, nor the glittering of the diadem, which alone procure these delights, that often cheer the peaceful breast of the cottager, who cannot penetrate the abode of royalty, nor find entrance amid the busy sons of traffic. The arrival of spring is attended with a thousand new delights; the beauty and fragrance of the opening blossoms, the warbling of the birds, and the widely diffused joy and gaiety that smile around. In general our terrestrial hopes are damped by anxiety and repressed by doubt, but the hope of spring is no less certain and satisfactory than it is pure and innocent. Let us then, whilst the stormy days of March shall continue, instead of repining and being chagrined, indulge the fond hope of spring, and suffer its pleasing influence to cheer our souls.

Hope is one of the choicest gifts which Heaven mercifully deigns to mortality; when the storms roar and the tempests howl, hope still supports our drooping spirits, and the rays of consolation gladden our hearts. Without this pleasing emotion, how sad and dreary would have passed many of the winter hours! Cheered by the hope of spring I have borne with patience, and endured without complaint, the rigours of winter and the hardships of the season, and now I am upon the eve of seeing it realised: a few more boisterous days passed, and all the beauteous pictures my imagination has so brilliantly painted will be confirmed; the sky will become serene, the air mild, the sun return with power, and the earth resume her long-lost beauty. Gracious God! I humbly thank thee, and bow before thee in the fulness of my joy and the overflowing of my gratitude, for the source of that consolation, which, in the hour of distress, warms my heart and softens the asperities of life. With what providential care and merciful regard thou hast veiled the evils which hover around me, whilst the pleasures which await me are seen far off, and smile upon my exertions!

Without hope, how dreary would be the world; appearing to the care-worn pilgrim one wide desert, all the paths of which are surrounded with misery, beset with trouble, and embittered with sorrow! But hope lights us on our way; when darkness lowers and gloom oppresses, hope strengthens our faultering steps, collects our scattered senses, and presents to our view a pleasing prospect lying before us and just within our reach; we spring forward with alacrity, and often pass our lives in the eager pursuit, with as much pleasure as if we had obtained the object of our wishes. Hope raises the sinking heart, and restores the courage which begins to droop; and each time I feel the magic influence of her rays, I will bless thee, O my God! and thank thee for the daily benefits I receive, as well as for those reserved for me at a future time. Blessed for ever be thy divine mercy, which permits me to hope that when time here shall be no more, my glad soul shall quit these narrow confines, to repose in the bosom of its Creator through the countless ages of eternity. Were it not for this certainty of immortality, this fond hope of eternal life and happiness, few would be the incitements to virtue, and weak the inducements to mental improvement; [illegible] by misery in a world checquered by misfortune; or, if affluence favour us, we should be tempted to indulge in the thoughtless round of continued dissipation. But with the expectation of a future glorious state of existence, we can smile at care and trouble, arm ourselves against the fleeting pleasures of this life, and pity the deluded disciples of folly and dissipation.

MARCH X.

Hoar-frost.

At this season of the year we very frequently observe the bushes, and other matters exposed to the morning or evening air, acquire a sort of crust on the surface, as if they were candied. This is what is called hoar-frost, which is merely the exhalations and moisture condensed and frozen by the coldness of the surrounding air. The dew which during the day has evaporated from the earth descends in the night, and in cold weather becomes congealed, putting on that white appearance we so often observe in a morning; and as the large bodies retain their heat the longest, we generally see more of the frost upon the hedges and grass than on the larger trees. The dew coming in contact with bodies colder than itself imparts to them a portion of its heat, the loss of which, if considerable, occasions it to lose its fluidity; when its particles condensed unite more closely, and form a slender coating of ice. In this manner our hair, as well as that of animals, is sometimes covered with hoar-frost; the perspirable matter exposed to the cold air becomes congealed, and this effect is produced. Thus also are formed the icicles we see hanging from the houses in winter: the water dropping down imparts the heat it contains to the colder air, and thus losing its fluidity becomes congealed.

MARCH XI.

Means which contribute to fertilise the Earth.

The wisdom of God employs a variety of means to render the earth fruitful. At one time the opening clouds shower down the rain, which softens and nourishes the earth; at other times, when deprived of the benefit of rain, a gentle dew refreshes its surface, and animates the feeble plants, languishing for want of moisture. Each season has its peculiar means of fertilising the earth. The snow, which, during the winter, covered our fields and our meadows, not only preserved them from the effects of the cold, but tended to their subsequent fertility. The frequent tempests in the spring preserve the purity of the air, dry the earth, and disperse the rain more generally over its surface: with each storm of wind and of rain the Creator scatters his blessings upon the earth.

We may safely affirm that there is no change in the air or upon the earth which does not directly or indirectly contribute to its fertility. Every season brings a succession of phenomena peculiar to it, each of which produces in nature effects, the beneficial influence of which is more or less visible. Even those plagues which desolate certain countries are only partial evils, conducing to fulfil the great designs of Providence, and from which advantages result to the world at large. Every-where, and at all times, we have cause to be thankful to our Creator for his tender cares and paternal solicitude.

"O Lord, God of times and of seasons! thy praises reach from the centre of this globe to the heaven of heavens! Our sphere rolls through the starry expanse; now blooming with flowers, and now wrapped in snow; here blushing with the vine, there covered with thorns. Yet it still celebrates thy glory, and unites its music to the harmony of the spheres. When the snow and the ice convert our meadows into desert places; when the hurricane gathers in the air, the thunder peals, and the lightning causes the hearts of men to tremble; when rivers, bursting their banks with one vast swell, inundate a country, and all the elements seem to combine and prepare for the final destruction of the world; it is then thou art providing for the inhabitants of the earth life, joy, fertility, and abundance."

Here we may properly consider the means which God uses to fertilise the moral world. To lead men to a knowledge of his will concerning them; to inspire them with an aversion to sin, and a love for virtue and the practice of good; he sometimes speaks the language of gentleness and persuasion in their hearts, at others in a louder and more terrible tone. Sometimes he appals the guilty by the severity of his judgments; and awakens the indifferent from their slumbers by the force of their sufferings. He declares himself to the hardened and unrelenting, as he formerly appeared to the Israelites upon Mount Sinai, clothed in lightning and speaking in thunder; but the softer heart he gently leads from vice with tenderness and mild persuasion. I am a living witness of his divine beneficence, and I acknowledge, with praise and thanksgiving, that he has exercised all these means to draw me nearer to his presence. Sometimes it has pleased him to confound my pride by chastisements, and to awaken me to a sense of my duty by various afflictions and trials, which, whilst they softened my heart, tended to wean my affections from the things of this world. At other times he has visited me with his blessings, and his favours have descended upon me more abundant than the vernal showers. But what return have I made for these benefits? Have I brought forth fruit, which a good soil never refuses when cultivated? Alas! my heart rather resembles a rock, which the thunder cannot shake, nor the rain penetrate; yet I hope, O God! the time will arrive, when I shall become more submissive to thy will, and more disposed to obey thy commands. The longer I put off the hour of repentance, the more my sins multiply, and the more difficult I find it to purify my heart; and I pray to the Almighty God that he will not leave me a prey to my own evil disposition, but that he will graciously condescend yet to bear with my weakness, and enable me to draw nearer to him: whether it will be my lot to experience hardships and misfortunes, or to pass along the vale of years in peace and tranquility, I will bless the God of my salvation, and pray that I may not pass my days in indolence and vanity, but that I may be productive of good works.

MARCH XII.

Of the Advantages derived from the Sea.

A merely superficial view of our globe might give occasion to believe that there is no proper proportion observed between the earth and the water, the vast expanse of the latter seeming to accord ill with the accustomed wisdom and goodness of God. We think that we should have received more benefit, if it had pleased the Creator to have suffered the great space occupied by the seas and the ocean to have been solid land. Short-sighted and ignorant man! are you yet to learn that nature does nothing in vain, and that God has formed this earth with inconceivable wisdom and harmony in all its parts? If the ocean was reduced to only half its present size, half the exhalations which now ascend from it would cease to form clouds, in consequence of which the earth would not be sufficiently irrigated: for great part of the rain which descends from the skies is an effect of the heat causing an evaporation from the surface of the sea. Thus we find the ocean is the grand reservoir, which supplies the earth with moisture, and consequently with fertility. If the extent of the seas should be diminished, great part of the earth would become as a desert, dry and sterile, from the want of rain; and the sources of those rivers that depend upon the rain would be exhausted. The intercourse between distant nations being cut off, or rendered nearly impracticable, commerce would cease; by which we should be deprived of the many necessaries and comforts of life, besides losing that expansion of mind which arises from our knowledge of foreign countries, and an acquaintance with men and customs differing from our own. For it is an incontrovertible fact, that in proportion as the inhabitants of a country keep themselves confined within their own little territory, without any intercourse with foreign nations, they become contracted, prejudiced, and ignorant.

Let us then acknowledge, with gratitude, the wisdom of God in this beautiful arrangement of the universe; that the same medium through which we become acquainted with every part of the universe is the great source of all our treasures, whether in commerce or in agriculture, and supplies millions of people with their daily food and support.

MARCH XIII.

Difference existing between Animals and Plants.

The difference between animals and vegetables is so obvious, that we can readily distinguish them by the slightest observation. The most striking distinction is the power which animals possess of moving from place to place, which vegetables do not enjoy. Another very essential distinction is the faculty of perception, which animals have in a greater or less degree, but which is not common to plants. A third difference is the manner in which they are nourished. Animals, by means of proper organs, have the power of selecting that kind of aliment which is adapted to their nature; whilst plants are obliged, without choice, to receive such as the earth and water offer them, or perish for want. By means of vessels they imbibe the succulent juices of the earth; and their leaves, likewise furnished with vessels, absorb the moisture of the atmosphere which circulates through their system. The variety of species is much greater in the animal than in the vegetable kingdom: amongst insects even, there are perhaps a greater number of classes (including those distinguishable only by a microscope) than there are species of plants known on the surface of the globe. Animals have less conformity with each other than plants have, which renders them more difficult to classify.

Another distinguishing characteristic is the different mode in which animals and plants are propagated: and plants, whether they appear above the surface of the earth or are buried beneath, whether they float above water or are below it, have their roots fixed in the earth; whilst animals are found at large on every part of the earth, or they inhabit the air, or dwell in the waters; they are found every-where throughout nature. And lastly, they differ most materially in their form. Yet, notwithstanding these certain and obvious characteristics, we are far from having discovered the exact limits of these two kingdoms, or from knowing how to distinguish them in every instance; nature, in diversifying her works, makes use of shades almost imperceptible. In the great chain of beings the links are beautifully formed; from the highest to the lowest the degree of perfection gradually falls; but by such a gradation, that the most perfect differs but little from the one immediately next to it. We find some plants endowed with sensibility, and some animals that are nearly void of sensation. Corals formerly were thought to be marine plants; but subsequent observations prove them to belong to the animal kingdom: and there are many substances which naturalists are not yet determined under what class they should be arranged, so difficult is the task of assigning the precise limits to either kingdom; and the more our observations are multiplied, the more shall we be convinced of this difficulty, arising from the great resemblance between some of the inferior species of the animal kingdom with certain vegetable productions.

Our researches into nature are always attended with this happy effect; that the more we see of her works, whether animate or inanimate, the more we are convinced that the world, with all the vast variety of beings which it contains, is the work of an infinite and all-powerful God. Such beauty, harmony, and variety, could not be self-created, but must proceed from an Almighty, Omniscient, and Infinite Being, whose power and goodness we trace through all the varieties of animated beings, beginning with the meanest reptile that crawls on the earth, and proceeding from link to link till we arrive at man, the angels, and God himself, the great First Cause of all: or we may begin with the rudest species of matter, the stones upon which we tread, and mark the variations till we reach those luminaries that nightly present their revolving orbs to our astonished view. All speak the glory of God the Creator, and evince his protecting power and fatherly care: the rays of his perfection beam on all his works; his mercy and goodness are impartially diffused over the creation; and such men only meet with superior favour and divine regard, who act as becometh those who are conscious that all their deeds are known to a superintending Providence, which loves them as they love one another.

MARCH XIV.

Uniformity and Diversity in the Works of Nature.

THE heavens above, and the earth beneath our feet, though they offer at different times varied spectacles, and a diversity of beauty, still from year to year remain the same, and lose nothing during the lapse of ages. At one time the face of heaven is dark with clouds or obscured by mists; then again serene and of a pure azure, or streaked with the most beautiful colours. The midnight darkness yields to the silvery light of the moon, which in turn is lost in the glory of the morning sun. At one time the vast expanse of the heavens displays nought but gloom; at another, it is impossible to number the constellations that illumine the regions of space. If the heavens undergo various revolutions, the earth is not less subject to change. Within a very short period the severity of winter has withered its charms, and rendered it one immense field of uniform sterility. But soon the returning spring, succeeded by the warm summer, will restore its beauty, bring back its delights, and open out its treasures; and autumn will follow to mellow the fruits that required a longer time to be matured. Again, what a varied aspect is presented by different countries upon this globe! In one, we see plains whose utmost boundaries no eye can penetrate, whose beauties no tongue can describe: in others, mountains whose waving tops fan the breeze, and at whose base extended valleys, watered by the richest streams and laved by the purest rivers. Here gulphs yawn, and precipices threaten; there the high hill dances in the reflecting wave, and the calm lake gently washes the distant shores; whilst afar off is heard the rush of the torrent, and the impetuous roar of the cataract.

Wherever the eye turns it meets with variety to interest; the mind is expanded, and joy and delight cheer the heart.

The same assemblage of uniformity and variety exists throughout the vegetable kingdom; the subjects of which all proceed from the same bountiful mother, and receive the same kind of nourishment: yet what an astonishing diversity in the different species, both [illegible] to form and properties! Thus we see the oak [illegible]ering above the grass, and the elm looking down upon the humble primrose. All that bear a resemblance to each other in certain particulars are arranged under the same class. It is the same with regard to animals, which are likewise arranged under different classes according to their resemblances in certain points. And however man, by the superiority of his faculties, is raised above plants and animals, some things he enjoys in common with the meanest of them. Like them he requires nourishment, and like them cannot live without air, water, the earth, and the influence of the sun. Plants grow, ripen, increase, wither, and die; and these laws of nature extend to man and the whole animal creation.

If we proceed to examine the varieties of the human species, what a wonderful mixture of conformity and diversity we meet with! Human nature in all places is generally the same; and yet, through all the extent of the peopled world, we find that, in this multitude of men, each individual has a figure peculiar to himself, a physiognomy, and certain properties and qualities of mind and disposition, which form his character, and serve to distinguish him from all the rest of the species.

Naturalists, for the sake of accuracy and facilitating their researches, have formed three general heads or kingdoms; the animal, the vegetable, and the mineral; under which they arrange all the productions of nature: these again are subdivided into classes, genera, and species. Thus every substance in nature is arranged under one or other of these general heads; and by being acquainted with the characteristics of any particular class, when we meet with a new production, we know whether or not it is entitled to a place in this class.

From this assemblage of uniformity and diversity, which is infinitely extended, arise the order and be[illegible] of the universe. The diversity of form and properties between the creatures of the earth displays the wisdom of God, who has designed each to hold a certain place and rank in the creation, to answer certain purposes; and he has so ordered, that no one can destroy the relations and oppositions he has established amongst them. He has founded his government upon wisdom, and regulated every thing for the utility and enjoyment of his creatures. Confined as are the views of man, partial and contracted as are his thoughts, he yet is capable of knowing and feeling this truth; the slightest examination of the universe declares it to him; and the further he penetrates, the more he regards God manifested in his works, the more his mental powers will increase, and the less will he be affected by the contaminating influence of a base and sordid world.

MARCH XV.

Of Seeds.

VEGETABLES spring from seeds; but the greater part of them are not sown by man, and are even invisible to him: they are dispersed by the winds, fall upon different parts of the earth, take root, and spring up. For this purpose nature has furnished them with different means; some she has provided with a light down, which renders them more capable of floating on the air, and being dispersed to different places; others are sufficiently heavy to fall immediately to the ground, and bury themselves in it without any assistance; and others, that are light enough to be borne along by the wind, are often provided with little hooks, which, laying hold of different substances in their way, arrest their progress, and prevent their being scattered very far from their native soil. Some of them are enclosed in elastic capsules, which, at certain periods, burst open, and shoot out their contents. And there are trees which owe their origin to the birds of the air: oaks have been known to spring up from the care of ravens; it is supposed that, led by instinct, they make holes in the earth with their beak and deposit the acorns, which they cover with earth and moss, as a supply of food when other sources fail. Many seeds after being swallowed by birds remain uninjured, and through their medium become plants, thrive, blossom, and produce new seed. If to the care of man alone the fields were destined to receive their beauty, and the forests their verdure; if no seeds were to take root in the earth but those coming from the hand of man; how desolate would be our meadows, and desert our groves! But at the return of spring the soil again waves, and the odour of a thousand flowers scents the air, without the assistance of man. Yet these are not all the wonders which the consideration of seeds present to us; the whole plant is contained in one little seed: within the narrow compass of the acorn are concealed all the rudiments of the oak, the monarch of the fields and the pride of nations. And we further trace the wisdom of the Creator in the admirable structure of the seed, upon the preservation of which must ultimately depend the existence of the vegetable world.

How carefully, and with what precaution, are the blossoms and seeds of those plants which continue all the year in the earth enclosed in and defended during the winter by strong tunics of a curious texture! And plants which cannot bear the cold of winter are preserved beneath the surface of the earth in the form of roots, till the vernal sun causes them again to germinate, and flourish with renewed charms. Some seeds are placed in the middle of the fruit, others enclosed in capsules and sheaths, each being defended and protected in a most beautiful manner, at once displaying the power and the mercy of the Creator, whose hand is seen in every thing. The least of nature's works manifests his wisdom and goodness. And now whilst the busy husbandman deposits the different seeds in the earth, may I be seriously occupied with my God, who alone can sow the seed of righteousness, and bring forth fruit.

MARCH XVI.

Grandeur and Distance of the Sun.

If we have never properly considered the narrow compass of our earth, or are too ignorant to perceive our own insignificance, we may perhaps be benefited by considering that immense body which communicates light and heat, not to our world only, but to many others. The sun, nearly in the centre of all the planets and comets, may be regarded as the monarch of many worlds, to which he imparts light, heat, and motion. This alone would lead us to conclude that his size is prodigious, and this opinion is confirmed by his apparent magnitude, notwithstanding his immense distance from us. But the calculations of astronomers have certified us of this beyond the possibility of doubt. From them it appears that the diameter of the sun is about 100 times greater than that of the earth, and consequently he is a million times larger than the whole earth.

Astronomers have differed respecting his distance; the truest calculation makes it about 82 millions of miles. Some planets move in their orbits much nearer to the sun, and others at a greater distance, than does our earth; but though, if formed like our globe, in the one case they perhaps might be consumed by the heat, in the other wrapped in cold and darkness, we have reason to believe that those spheres which move round the sun, whether nearer to him or more remote than our earth, are so constituted, that neither the globe itself, nor its inhabitants, suffer from their situation.

Perhaps it will be urged, that what we have stated respecting the magnitude and distance of the sun is exaggerated; for we can discover nothing so great as the earth which we inhabit, and with which we compare the sun, which is a million times greater. This luminary from its prodigious distance appearing so small, ignorant people are disposed rather to believe that which they can see with their own eyes, than give credit to calculations which their reason cannot comprehend. But had we been placed on a planet whose magnitude bore the same proportion to the earth as the earth now does to the sun, we should have been equally incredulous as to the dimensions of this earth, compared with that we then inhabited. It is far from being strange then, that we should be astonished when we are told of the distance and vast magnitude of the sun.

This admiration ought to make us ascend to that Being which is its Creator, Director, and Conservator; compared with which, the grandeur and brilliancy of the sun are as nothing; consider the glory of him who created it, and you will find infinitely more incomprehensibilities than when you only reflect upon the grandeur of the sun. If the earth, compared with the sun, is so small, what must be the littleness of man compared with his Creator! If the space between the earth and the sun is found to be so immense, what an inconceivable distance is there between man and the infinite God!

"Who is like unto thee, O Lord? What can be compared unto thee? Thy glory is exalted beyond the reach of praise, and thy grandeur above the comprehension of man. Glory, splendour, and majesty surround thee, the principle and source of life; and light encircles thee as a garment." But whilst we admire the sun as he shines above the horizon, let us not forget our Divine Redeemer, that sun of righteousness which visited us in our afflictions, and whose rays impart life, health, and eternal salvation; and without which, deprived of light, virtue, and consolation, we should still wander in darkness, ignorance, and the grossest sin!

MARCH XVII.

Upon the imperfect Knowledge we have of Nature.

WHY has not the Creator given us the power of investigating and explaining all the phenomena of nature, for which purpose the limits of our understanding are too confined? He wills that we should become acquainted with his perfections, that we might magnify his name. Would not then the most certain means of knowing and appreciating his attributes be, to have a more intimate acquaintance with the works of the creation? It seems to me as if I could much more admire the grandeur of the Supreme Being, and contribute much more to the exaltation of his holy name, if I was enabled to comprehend the whole, to know the perfections of each part, and to discover all the laws and springs of nature. If I now can admire the infinite greatness of God, when I only know a small part of his works, what would my sentiments be, how absorbed in the meditation of his glorious attributes, with what awe and veneration should I adore him, if I could fully penetrate into the wonders of nature, and explain with certainty the phenomena she brings forth!

But perhaps this mode of judging is erroneous; for since God has not thought fit to give us a more profound knowledge of nature, we are to suppose he prefers the degree o adoration and glorification he now receives from our limited faculties, to that he would have, were we to enjoy a more perfect state. Have we any reason to be surprised that in our present condition we are ignorant of the first principles of nature? Our senses are unable to penetrate into the essence of things, and we cannot form an idea of objects which our senses are incapable of observing. And there is an abundance of things which our senses cannot discern. If we wish to represent to our imagination any thing infinitely great, or infinitely small, they elude our grasp. If we reflect upon the rapidity with which the rays of light pass, we are incapable of following the velocity; and when we wish to conceive an idea of the vessels and circulation of blood in a creature a million times less than a grain of sand, we feel the inadequacy of our mental powers. Hence, as nature ascends from what is infinitely small to what is infinitely great, we shall not be surprised that we cannot penetrate its real principles.

Notwithstanding this imperfection in our abilities, we have no reason to complain that our knowledge of nature is so slight; we have always before us a vast field of improvement, in which we are incited to labour by every thing that can arouse and interest. Our faculties are so formed, that by cultivation they improve, and are capable of expanding to a greater degree than is generally supposed; we are continually adding new truths to former experience, and as we proceed we discover more to encourage our researches; and the more enlightened we become, the further we penetrate into the mysteries of nature, the more we find to raise our ideas of the glory, the power, and the goodness of the Almighty Creator. May we always, O God! be favoured with the light of thy holy spirit, to guide us on our way; to enable us rightly to direct that knowledge we are enabled to acquire, and never to mistake or pervert those abilities with which we have been blessed, on the proper or improper use of which depends our future misery or felicity!

MARCH XVIII.

The Utility of Vegetables.

If we consider the great number and diversified appearance of vegetables, we shall perceive, as in every thing else, the beneficent designs of the Creator. What other end could he have in view in covering the earth with so many different herbs, plants, and fruits, than the advantage and felicity of his creatures? Such is the number and variety of plants, that upwards of 30,000 species have already been enumerated; and every day more are added to the list. Their increase seems infinite: who, for example, is not astonished when he is told that one single grain of maize (Indian wheat) produces 2000 more; that one poppy-seed multiplies itself so, that, in two or three years it produces sufficient to sow a large field? Hence, no one can doubt the care of Providence, particularly when they consider the use that has been made of vegetables from the earliest ages.

Do not fruits and vegetables daily furnish us with the most salubrious and nourishing aliment? And are we not indebted to the vegetable kingdom for the greater part of our clothing, furniture, and habitations? Every part of a plant is of some utility. The roots afford us food, medicines, pitch, dyes, and various utensils. With the wood we construct our buildings, furniture, and different instruments, machines, &c.; it likewise serves us for fuel, and from it we procure charcoal and medicines. The bark is of particular use in tanning, as well as in the cure of some diseases. The ashes are useful in fertilising and ameliorating the soil, bleaching cloth, and making salt-petre. The resin is used in painting, and enters into the composition of pitch, tar, and balsams. Turpentine is used as a medicament, and colophonia (hard resin) to varnish, to solder, and to rub the strings of musical instruments; and mastic is used in perfumes.

Flowers, delightful both for their beauty and fragrance, are very ufeful in medicines, and supply the bees with their wax and honey. Fruits are singularly beneficial and grateful, whether fresh from the trees, boiled, dried, or preserved. But it is not man alone which receives advantage from the vegetable kingdom; the greater part of animals derive their nourishment from that source. For this purpose we find fields and meadows innumerable, covered with every variety of plants and vegetables. The wants of every individual are provided for; each knows the kind of vegetables most suited to its nature; and no one can number the blessings afforded by this kingdom, nor find expressions to celebrate the goodness of God.

MARCH XIX.

Structure of the Human Heart.

How wonderfully and exquisitely formed is that muscular body, situated within the cavity of the chest, and called the heart! Its figure is somewhat conical, and it is externally divided into two parts: the base, which is uppermost, and attached to vessels; and the apex, which is loose and pointing to the left side, against which it beats. Its substance is muscular, being composed of fleshy fibres, interwoven with each other. It is divided internally into cavities, called auricles and ventricles; from which vessels proceed to convey the blood to the different parts of the body. The ventricles are situated in the substance of the heart, and are separated from each other by a thick muscular substance; they are divided into right and left, and each communicates with its adjoining auricle, one of which is situated on each side the base of the heart. The right auricle receives the blood from the head and superior parts of the body, by means of a large vein; and in the same manner the blood is returned to it from the inferior parts, by all the veins emptying their stores into one, which terminates in this cavity; which, having received a sufficient portion of blood, contracts, and by this motion empties itself into the right ventricle, which also contracting propels the blood into an artery, which immediately conveys it into the lungs, where it undergoes certain changes, and then passes through veins into the left auricle of the heart, thence into the left ventricle, by the contraction of which it is forced into an artery, through whose ramifications it is dispersed to all parts of the body, from which it is again returned to the right auricle; thus keeping up a perpetual circulation: for, whilst life remains, the action of the heart never ceases. In a state of health the heart contracts about seventy times in a minute, and is supposed at each contraction to propel about two ounces of blood; to do which, the force it exerts is very considerable, though neither the quantity of force exerted, nor of blood propelled, is accurately determined.

The heart comprises within itself a world of wonders; and whilst we admire its admirable structure and properties, we are naturally led to consider the wisdom and power of Him who formed it, from whom first proceeded the circulation of the blood and the pulsation of the heart; who commands it to be still, and all the functions instantly cease to act: in God alone we live, move, and have our being; and may we never, whilst the vital stream flows through our veins, forget his goodness, or repay his love with ingratitude!

MARCH XX.

The Change of Seasons.

The coldest as well as the warmest climates have but two seasons in the year, which are essentially different. In the coldest countries the summer continues about four months, during which the heat is very powerful; the rest of their year may be considered as winter. Their spring and autumn are scarcely perceptible, because in the space of only a few days an excessive heat succeeds the greatest degree of cold, and the extreme of heat is succeeded as rapidly by the extreme of cold. The hottest countries have a dry and scorching season for seven or eight months; when the rains descend, and continue four or five months, this being the only distinction between their summer and winter.

It is only in temperate climates that we find four distinct seasons in the year. The heat of summer slowly departs, by which the fruits of autumn are rendered mature, without suffering from the winter's cold. And in spring, plants are enabled to germinate, uninjured by remaining frosts, and not hastened into premature efflorescence by too early warmth. In Europe, we observe these seasons most distinctly in Italy and the south of France. In the temperate regions summer and winter generally commence with abundant rains, which continue for a considerable time. From the middle of May to the latter end of June it seldom rains; but after this time heavy rains sometimes set in, and continue till the end of July. The months of February and April are usually very variable.

This change of seasons deserves our utmost attention and admiration: it is not effected by blind chance, for in fortuitous events there is neither order, constancy, nor regularity; whereas in every country of the earth, the seasons succeed each other regularly, as the day follows the night, and precisely in the expected time the aspect of the earth changes. We see it successively adorned with herbs and leaves, with flowers and fruits: it is then deprived of its ornaments till spring returns to restore them with increased beauty. Spring, summer, and autumn, nourish and gratify the animal creation by the fruits which blossom, increase, and ripen in luxuriant abundance. And though in winter nature seems to droop and to be dead, this season is not without its benefits.

Now that this month is so far advanced, we may begin to hail the near approach of spring, and all its accompanying pleasures, with transport and delight. How many are there who have longed to see this restoration of nature, and hoped to be recovered from the sufferings they endured during the winter, to whom this consolation has been denied, the thread of their lives being snapped ere the vernal breezes have refreshed the earth! Perhaps this is the last spring we shall be permitted to see, the last time we shall enjoy the freshness of the morning air, breathing the sweets of the opening flowers. Before the return of the equinox we may be mingled with the dust, inhabitants of the silent tomb. May this reflection dispose us to feel the true value of life, and teach us that serenity of soul and Christian fortitude, which will enable us to receive the awful messenger without fear, and hear the summons without regret!

MARCH XXI.

Every Thing created has its Use.

If there is a superintending Providence which governs the world, the smallest things and most trifling events must feel its influence, and nothing under the agency of this Power will occur without some evident utility. Perhaps it will be said, "What a number of things there are in the world of no use whatever! The north-wind blows, and the blossoms of trees are scattered; they wither and are useless. Seeds, which might have produced new plants, perish without bringing forth fruit. Multitudes of insects are not only useless, but extremely injurious to man, beasts, and vegetables. Many men and animals scarcely show themselves upon the earth, when they disappear; others are born monsters, impotent, and deformed. How many faculties and talents are lost for want of being called forth? How many noble projects and bold enterprizes miscarry before they arrive at maturity! Would all this take place, if a Being infinitely wise and provident governed the universe?"

But have you who thus dare to doubt the being and providence of God a perfect knowledge of all things, with their relations and dependences amongst each other, to pronounce your decisions with certainty, and promulgate such sentiments with confidence; to say, This can do no good, That is absolutely wrong, or of no use! Never forget the narrow limits of your knowledge, nor the feeble rays of your light. It is your duty to observe in silence the ways of God, and to admire and adore him in those works; which, so far from justly criticising, you are not able to comprehend; all those which you do know you will find contain proofs of infinite wisdom, and are of a certain and manifest utility. A thing may be useful in different ways, and whilst it is serving one purpose we cannot expect that at the same time it should serve another. The insect, which at its birth becomes the prey of swallows, cannot produce a new generation. The researches of alchymists for the philosopher's stone have not, it is true, made gold more plentiful; but through their means many valuable discoveries have been made, and the insect supplies the swallow with its food. Your tears may not soften the callous unfeeling man, who abuses his power in oppressing the weak; but though your intercessions in favour of the unfortunate are fruitless, your tears are not lost, nor shed in vain; they tend to call forth the finer feelings of the heart, and increase that sensibility which is the source of true knowledge and virtue; and there is a Being who hears your sighs, and to whom all your efforts on behalf of suffering humanity are known, and received as the most grateful incense.

Never let us suppose, then, that there exists any thing in the universe entirely useless. It is true there may be certain things which do not seem to succeed, nor answer exactly the end we expected them to perform; but they undoubtedly fulfil the purpose for which Providence designed them, and that belief is sufficient for us. For certain things to take effect and be realised, perhaps, it is requisite that others should fail and appear defective. If it is true that wisdom is not entirely engrossed about the present, but extends its views to the future; if God is infinitely wise, and if his wisdom is to be manifested to the world as in a mirror; there must occur many things which, separately considered, do not perfectly appear to accomplish their destination, because they required other causes to co-operate with them. The part which these have in the execution of the whole plan may be so imperceptible and so little understood, as entirely to escape our notice. But surely it does not follow, that because we cannot perceive the end they answer in the great system of nature, they do not contribute to its perfection, and are therefore useless; on the contrary, we have just reason to conclude, from what we see of the power and wisdom of God displayed in his works, that it is impossible for him to have created any thing without design, or without utility; though, from our imperfect nature, we are not always able to perceive the object and use of some of his works.

This firm persuasion will contribute to our peace and happiness; for there daily occur in nature, and in the course of human life, events, whose connections, relations, and designs, appear to us incomprehensible and of no utility, and which might otherwise weaken our faith in God, as well as hurt and distress our feelings. But the more we are convinced by reason, observation, and experience, and confirmed by the testimony of the Holy Scriptures, that God, as he is infinitely wise and powerful, so also he is infinitely merciful and just; the more contented and cheerful shall we be in adversity as well as in prosperity. We shall then see and acknowledge, that all that God effects, or permits to be accomplished, is for the wisest purposes, and always for the universal good of mankind. And when we observe in nature so many inexplicable events, seemingly repugnant to the divine plan, far from finding cause to complain, let us rather adore the wisdom of God, and ascribe unto him the glory which is due; ever trusting to him for safety and support, and confiding in his power without the folly of cavilling at his dispensations. This submission to his will is the way to happiness here, and eternal felicity hereafter.

MARCH XXII.

Harmony between the Moral and Physical World.

THE wisdom of God has established so great an affinity between the earth and its inhabitants, that they seem to be formed for each other. There is a certain connection and harmony which links together all the works of the creation. There is an evident analogy between the human body and the surface of the earth; as the bodies of plants and animals are formed, and come to maturity, then perish; so also are the bodies of men subject to similar changes. Such is the plan of the Creator, and it is pregnant with wisdom and goodness, adorned with perfection and beauty; it is only our imperfect knowledge which prevents our seeing it as it is.

If any one objects, "Why then has not God given to every one the same faculties and the same degree of intellect?" we may answer—Who art thou, blind mortal, that callest God to an account for his works? Shall the creature dictate to his Creator, or question his powers? As well might we ask, Why God has not so ordered, that all the countries on the earth, that every field, should be equally pleasant and fertile?

Why do we find in some parts a rich and fruitful soil, whilst others are so sterile and desert that all attempts to improve them are in vain? There can be no doubt that this diversity is highly beneficial, and worthy of our warmest admiration, though not always conformable to our mode of thinking. The most desolate and barren regions, as well as the most wild and uncultivated nations, have their beauty and use in the eyes of God; all hold that place which has been assigned them, and which is best adapted to their nature, in the immensity of created beings; and their variety serves still to manifest the wisdom of God, which is infinitely diversified.

But as it is manifestly the intention of Providence that the earth should be cultivated, and produce fruits in abundance for the preservation of its inhabitants; and as for this end he has given us corn to sow the earth, and seeds of various kinds to supply food and nourishment; so also he has given to each individual a mind, which, according as it is cultivated, will bring forth fruit; it possesses all the capabilities of virtue and of happiness, and only requires the seed to be sown to produce a harvest rich and abundant. With this view he has given us lessons of true knowledge and religion, which, when received in a mind properly disposed and regulated, will produce exquisite fruit, and abundant as the corn planted in a fruitful field.

There are vast tracts of uncultivated and barren lands, where no verdure smiles, nor fruit refreshes, though they receive the fostering rays of Heaven; so also, notwithstanding the general diffusion of the Gospel, there are countries which still remain in darkness, and there are people yet besotted by ignorance and infidelity. And among the civilised nations of the Christian world the influence of the Gospel is often very slightly felt; many people know not what it is, do not comprehend it, nor have any idea of the saving power, and sublime truths, of a pure and holy religion. Others receive it with eagerness and joy, and for a space acknowledge its influence; but the impression is not lasting, and soon becomes obliterated. Some are too much agitated by the passions and concerns of the world to attend to the gentle monitor: but there are some who receive the Divine word with a heart pure and incorrupt; they hear its dictates with pleasure, and, by following them with perseverance, become of the happy number of the wise and prudent, whose steps are marked by virtue, sincerity, and peace, to whom it is indeed the power of God unto salvation.

MARCH XXIII.

Of the Nature and Properties of Air.

AIR is a subtle fluid, which surrounds our globe, and which all living creatures respire. Although it is so near us, every-where surrounds us, and we are continually experiencing its effects, we are not yet sufficiently acquainted with it to precisely determine its nature. We know that it is a substance, for when we pass our hand rapidly through it we find resistance; and we are certain that it is fluid, its particles are easily displaced, and yield to all kinds of impressions. Were it solid, we could neither inspire it, nor move in it with facility. It possesses weight in common with other bodies, being about 816 times lighter than water.* The force with which the air weighs upon every square foot of the earth is equal to a weight of 2160 pounds. And a man, whose surface is about fourteen square feet, sustains a weight of atmospheric air equal to 30,240 pounds. This may appear incredible; but the resistance of the air contained in our lungs prevents our suffering any inconvenience from the pressure of the external air, an equilibrium being thus preserved.

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* Its specific gravity, according to the experiment of Sir George Shuckburgh, when the barometer is at 30 inches, and the thermometer between 50 and 60 degrees, is 0,0012. One hundred cubic inches of air weigh 31 grains troy.——Thomson's Chemistry.

The elasticity of the air is equally certain; it is continually making an effort to fill a greater space, and, though capable of compression, as soon as the pressure is removed it again expands. This is sufficiently proved by means of heat, which rarifies it to such a degree, that it may be made to occupy five or six hundred times more space than it did before the heat was applied, without losing its elastic power. All these phenomena are highly worthy of admiration, and in them we may perceive the causes of many astonishing effects. It is in the air that our globe is suspended; and it is in the air also that the clouds are collected, forming so many beautiful shades and colours, and which, as they are rarified or condensed, suspend the vapours, or permit them to descend on the earth, in rain, hail, or snow. Without air life cannot be supported, nor fire and water exist.

Thus then the air also announces the grandeur, power, and goodness of God, whose infinite wisdom alone could adapt this element to so many and various purposes. God creates and governs the rain, the snow, the winds, the thunder, and the lightning; he measures the quantity, gravity, elasticity, and motion of the air, and mercifully causes it to serve our necessities, and contribute to the general welfare of our globe. Let us then, who every moment breathe this air which supports our lives, adore the depths of the riches of his marvellous wisdom and understanding, who alone has created all these things manifested in the whole economy of nature with infinite splendor!

MARCH XXIV.

Nothing new under the Sun.

With respect to man, no doubt, there are many new things which take place in the earth; in every season we see new flowers spring up, new fruits ripen, and the whole face of nature annually changes. Every day is productive of new events and new revolutions: the situation of objects is continually changing, or they present themselves to our senses under different forms. It is only relatively to the limited extent of our knowledge and understanding that there is any thing new under the sun; and in this light nothing is more true than the saying of Solomon, "What has been will be, and what has been done will be done, and there is nothing new under the sun." God has not thought fit to multiply things unnecessarily; there is every thing which can satisfy our wants, gratify our desires, and satiate our curiosity. Far from exhausting, we are scarcely able to acquire a superficial acquaintance with the works of the Creator; our senses are not sufficiently acute and powerful to perceive all the works of nature, and our understanding is too weak to comprehend them; so that we can never form a just and accurate idea of the creation, nor of every created being; hence we often believe many things are new under the sun which are only new to ourselves. As the empire of nature is immense, and as we can grasp only a very small part at one view, we suppose every thing we see for the first time to be new; because in every part of the world there is an infinite variety of appearance, and diversity of imagery.

Nature does not require a continued and endless creation; it is sufficient that the Supreme Being preserves the order which he established in the beginning. There is no necessity for a number of springs to vary the works already produced; for they succeed each other, and return in regular order, and yet appear so infinitely diversified as to seem always new. The impossibility of our numbering or conceiving the whole extent of the works of nature, whilst it convinces us of the weakness of our capacity, strongly proves the existence of one great First Cause of all, an Almighty God.

But are there not many recent discoveries, entirely unknown to the Ancients? Are we not now familiar with phenomena in the kingdom of nature of which we formerly had no idea? Most of these discoveries have proceeded rather from the stimulus of want, than that of arriving at truth. As our wants multiply, new means are necessary to supply them; but these existed long before we knew them. Minerals, vegetables, and animals, that have lately been discovered, already existed in the earth, or upon its surface, long before the researches of men brought them to light; and many that we imagine to be modern discoveries were very probably known to the Ancients.

Were the world (what from the nature of things is impossible) the work of chance, the same fortuitous agent that causes its first existence might operate today as well as then; and we should be continually witnessing new productions. But the world and all created things being formed by a perfect Being, every thing that is made bears the stamp and broad impression of an all-powerful God, which established the foundations of the earth with wisdom, and formed in the beginning every thing that was essential to the preservation and well-being of the whole; so that there is no necessity for a new creation, or new laws, but all moves in harmony, guided by eternal sapience. In all, and through all, God is magnified and glorified; and to him is due eternal honour and everlasting praise.

MARCH XXV.

Of Caves found in Mountains.

Caves are generally found in mountains, and very seldom in plains. They are frequently caused by the eruptions of volcanoes, and the explosions of earthquakes. But what end do such chasms answer? Though we could discover no certain end in their existence, we may take for granted that they are not formed in vain.

However, the purposes they answer are often evident; they serve as reservoirs for water, which may be had recourse to upon a deficiency of rain. They are also useful for the freer circulation of air through the earth, by more readily permitting its ingress and egress, and thus lessen the frequency of earthquakes. They sometimes fill with water, and form lakes; such is the lake Zirchnitzer, in Carniola, which fills in June, and loses its waters among the neighbouring mountains in September. It is sometimes navigable, and at others so dry, that the inhabitants may plough, sow, reap, and hunt in it. Another use of caves is the shelter and retreat which, during winter, they offer to animals. Hence we find more cause to admire the wisdom and bounty of God; and the deeper our researches penetrate into nature, the less shall we find of useless matter, and the greater reason we shall have to adore the sublimity and perfections of God in his works.

MARCH XXVI.

Circulation of Sap in Trees.

The trees, which during several months appeared entirely dead, begin gradually to revive, and in the space of a few weeks will give much more evident signs of vitality; the buds will sprout, open, and the sweet blossoms expand. Though we have observed this revolution at the commencement of several successive springs, we have perhaps been ignorant of the means conducing to this end. The effects which we perceive in spring to take place in trees and other vegetables are caused by the circulation of the sap, which begins to move in the vessels containing it when acted upon by a milder air and increase of warmth. As the life of animals depends upon the circulation of blood, so does the life and growth of plants depend on the circulation of the sap, which is to them what blood is to animals. To effect this, nature has formed and adapted all parts of vegetables to concur in the preparation, motion, and conservation, of this nourishing juice.

It is principally by the bark that the sap, in the spring, begins to ascend from the roots into the body of the tree, and that even throughout the year life and nourishment are distributed to the branches and to the fruit which they bear*. The woody part of the tree is composed of small longitudinal fibres, extending in spiral lines, closely united together, from the roots to the summit of the trees. Amongst these fibres, some are so extremely small and fine, that a single one, scarcely as large as a hair, contains some thousand fibrillæ. There is an innumerable multitude of little tubes, in which the sap circulates, extending through all the body of the tree to the remotest branches; some conveying it from the root to the summit, and others returning it back again. During the heat of the day the sap rises through the ascending tubes, and returns by the descending ones in the cool of the evening. These tubes pass through the leaves, which are also supposed to answer the purpose of respiratory organs, and absorb the dew and moisture of the atmosphere.

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* From the experiments of Coulomb and Knight, it would appear, that the sap does not ascend through the bark, but through the wood; and it is well known that a plant continues to grow even when stripped of a great part of the bark, which would not be the case if the sap ascended through the bark; and those who are in the habit of obtaining sap from trees are obliged to carry their incisions deeper than the bark, or they are unable to procure any sap.—E.

The sap then is distributed through every part of the tree; its aqueous part evaporates by the pores of the vessels, whilst the oily, sulphurous, earthy, and saline particles blend together, to nourish the trees and promote its growth. If the circulation of the sap is checked, if the internal organisation of the tree is destroyed, either by a very severe frost, or by old age, or by some accident, the tree will die.

After such reflections as these, we shall no longer view the trees at this season with indifference, nor consider the change they are about to undergo as unworthy of our attention. Neither shall we observe the renovation of nature, without thinking of that God who has given life to all creatures, provided the trees with appropriate juices, given them the power of circulating the sap in vessels, and distributed to them life, growth, and nutriment. Yet how many people, year after year, unregarded let this season pass, and know less of the life and beauty of spring, displayed in plants and trees, than the cattle browsing on the plains. If ever they are blessed with another return of this season, may they begin to feel, and love to enjoy, the beauties of nature; and at length know, that the infinite Creator is near to us in every part of his works, and that each of his creatures proclaims his greatness. And may the Lord God, in his infinite mercy, grant, that whilst all nature rejoicing feels the reanimating influence of spring, we may awaken from our slumber, and walk forth to enjoy his presence.

our hearts softened, and our minds prepared by his divine influence to know and to glorify his holy name.

MARCH XXVII.

Ignorance of Futurity.

If we are ignorant of future events, we must not merely trace the cause to the narrow and limited faculties of the soul in its present state of existence, but we must go further, till we arrive at the Creator himself, whose will and pleasure it is that the knowledge of futurity should be denied us. He knows the strength of man, and the extent of knowledge his imperfect nature was capable of bearing. The knowledge of futurity, like the splendour of the noon-day sun, could not be steadily contemplated; it would be fatal to the happiness of men, and dangerous to his virtue.

Supposing that the future events of our life marked a bright and prosperous tract; whilst we viewed this at a distance, and anticipated that happiness which we know certainly awaited us, our present enjoyment would cease, we should no longer be contented and cheerful, but wait with impatient anxiety for those blessings which were held up to our view. But, on the contrary, was the prospect of future contingencies gloomy and marked by affliction and sufferings, the moment we read our fate our happiness would cease; the days which hitherto had been passed in peace and tranquillity would now rise in sorrow and depart in gloom. With a known evil impending over our heads, each morning bringing us nearer to the dread moment, we should live in hopeless misery, the prey of sorrow and despair, insensible of all the blessings around us. How infinitely merciful and wise then is that God who has shrouded futurity and darkness, gradually unfolding the veil as the events occur; so that we never are at once overwhelmed by the torrent of adversity, nor confounded by the blaze of certain prosperity.

Let us then never suffer ourselves to be disappointed by the delusive hopes of happiness, nor be rendered miserable and wretched by feeling the weight of misfortunes before they arrive. Let us rather thank the Almighty that our ignorance of futurity saves us from many a pang of inquietude, and delivers us from many a throb of anxious dread and fearful despondency. If we feel assured of the grace of God through the mediation of Christ, we have just reason to hope that futurity will unfold to us with joy and gladness; and as there is a just and gracious God, who orders and directs the universe, who knows all the events of our lives, and before whose view is continually present the circle of eternity; we may with safety, when we lie down to sleep, commend ourselves to his care, undisturbed as to what may happen during the night; and when the morning sun summons us to our duties, we may trust ourselves to his protection, without anxiety for the events which are to befal us during the day. And in the hour of trial, when dangers threaten and destruction seems to impend, let us still remember the goodness of God, and repose upon his protecting arm, in perfect assurance that whatever happens is for our good.

MARCH XXVIII.

Gradual Approach of Night.

NIGHT is a blessing bestowed upon us by the Crea- r, and is wisely and mercifully directed to advance by degrees. The sudden transition from the light of day to the gloom of night would be highly inconvenient ~~and ter~~rific. So immediate a change would occasion general interruption to the labours of men, and terror would be spread over the earth; all living creatures would feel its influence, and the organs of sight must suffer considerably by the suddenness of the transition. Hence it is wisely ordered, that darkness does not surprise us suddenly in the midst of 'our occupations, but advances by slow gradations: and the twilight which precedes it leaves us in time to finish our most pressing affairs, and to make the necessary arrangements. By this timely warning, the approach of night does not interrupt or incommode us.

But whence proceeds that lingering light, which at the end of each day remains to temper and soften the gloomy aspect of night? We no longer see the sun, and yet a degree of lustre still cheers us. The atmosphere which surrounds us refracts the rays of the sun, projected on its superior surface, and it continues to receive these rays after the earth by its rotation has withdrawn our sight from the sun; by which means we enjoy the light much longer.

Thus a bountiful Providence has not only regulated the greater revolutions of the seasons, but also the daily alternation of light and darkness, in that way which is most beneficial to us, and which demands our most heartfelt acknowledgments and thanksgivings. Let this gradual approach of night remind us of the evening of life, which advances by slow and certain degrees, till almost imperceptibly the hand of death lies heavily upon us. May the Almighty grant, when the period arrives which is to close our eyes in darkness, that as the measure of our days is full, so also may the measure of our good works be completed! Let us work whilst it is day, for the night cometh in which no man can work.

MARCH XXIX.

Magnificence of God displayed in his Works.

WHY are all the works of God so beautiful and magnificent? Why do we every-where discover various and innumerable objects, each clothed in peculiar charms, and outvying all the rest in beauty? Whence is it that we every-where find new subjects of astonishment and admiration? Doubtless that we may be led unceasingly to admire and to adore that Being, who is so infinitely more beautiful, sublime, and glorious, than all that we can discover or delight in throughout nature. We cannot help saying, If the works are so admirable, what must be the Creator of them! If the beauty of the creatures is so excellent, how inexpressible must be the grandeur and nature of the Being who formed them, and who sees the whole creation at a single glance!

If the meridian sun has splendour, the blaze of which dazzles and confounds our sight, we may well suppose, that He who first imparted life and being to this luminary, dwells in light inaccessible, utterly removed from the penetration of finite mortals. We cannot suppose he is less wonderful than the creatures he has formed; and the more striking and marvellous are his works, the more he must excite our astonishment and call forth our admiration: could we comprehend at once the totality of his grandeur, he would cease to be God, or we to be men.

There is no better way then of enlarging our views, of gaining a richer treasure of ideas and more ample intelligence, than in contemplating God, the grandeur and magnificence of whose works are beyond the limits of comprehension. By such contemplations all the faculties of the soul acquire strength and vigour, and our capability of enjoying happiness, both here and hereafter, becomes abundantly increased; for the more the capacity of our minds is enlarged here by contemplating the Supreme Being, the more ennobled and exalted will it be, and the greater will be its power of comprehension and of enjoyment in futurity. Let us then divide our attention between God and nature, which last reflects as from a glass the image of that Eternal Being whose presence we only see from the effects produced. We may collect the various beauties and perfections dispersed through the creation, and when their innumerable multitudes have struck us with astonishment and admiration, we may think how little and insignificant are all these compared with the perfections of the Creator; no more than a drop of water to the ocean.

Let us regard the most lovely and beautiful of created beings, abstracting what is finite and limited, that we may have more just and exalted ideas of the infinite excellence of the Creator: and when the sight of faults and imperfections in the creatures shall tend to lessen our admiration of their beauty, let us exclaim—If the creation, notwithstanding all its defects, be so beautiful and grand, how great and wonderful must He be whose splendour, ever unobscured, is purer than light, and more brilliant than the sun! Let us then employ our faculties in contemplating the all-adorable God; and not rest till we have taken our flight to the regions of perfection, where the most perfect of beings reigns in undisturbed felicity. Let our principal study be to learn to know God; for there is nothing so great as he is, and the knowledge of him alone will satisfy our desires, and diffuse through our hearts peace and joy, which nothing can molest or destroy; and it is in some degree a foretaste of that more perfect knowledge which shall constitute our felicity, and be our constant reward through eternity.

MARCH XXV.

Arrangements of the Seasons in different Planets.

The diurnal rotation of the earth round its axis, and its annual revolution round the sun, affords us the greatest advantages; which would induce us to suppose that the other planets enjoy similar blessings. All of them, except Mercury, have been observed to turn round their axes in different spaces of time; and most probably he is subject to the same general law, though his precise motion has not yet been determined. All the planets move in their own orbits round the sun, and even the secondary planets make a similar revolution round their primaries. And as the diurnal rotation of our earth effects the constant vicissitudes of day and night, and its annual revolution the change of seasons, we have just reason to conclude that similar changes take place in the other planets.

Venus turns round her axis in little more than 23 hours; Mars in 24 hours 39 minutes; Jupiter in 9 hours 56 minutes; the Moon in about 28 days. If we were to divide the day, that is, the time in which these revolutions are made, into twenty-four equal part, seach of which shall be called an hour, the hours of Venus will be a little less, those of Mars rather greater, and those of Jupiter not half so long as the days in our planet; whilst those of the moon will each be more than equal to one of our days. We may also observe that the axis of each planet is inclined like that of our earth; whence it follows, that during their revolution round the sun, their north pole is sometimes more, sometimes less, enlightened. It is then reasonable to suppose that they experience a change of season, as well as the alternation of long and short days.

Perhaps it will be asked, "Why all these reflectons?" They would be useful, if only to extend our knowledge; but they will be still more important, if we think of the consequences which must result from them. Shall we not have reason to conclude, that other planets besides our own are inhabited by living creatures? All the planets resemble our earth; like it enjoy the light and genial warmth of the sun, have the alternation of night and day, and the succession of summer and winter: but what end would all these phenomena answer unless the planets were inhabited? Considering them as so many peopled worlds, what a sublime idea we conceive of the grandeur of God, and the extent of his empire! How impossible to fathom his bounty, or penetrate the limits of his power! His glory, reflected from so many worlds, fills us with amaze, and calls forth every sentiment of awe, veneration and gratitude. Supposing that his praise is celebrated in all the worlds which roll above and round us, let us not be surpassed in our adoration, but in holy emulation mingle our hymns with those of the inhabitants of these numerous worlds, and celebrate the Lord God of the universe with eternal thanksgiving!

MARCH XXXI.

Care of Providence for the Preservation of his Creatures experienced in every Country of the World.

By this time we have become acquainted with the greatest part of the earth; and new regions have, from time to time, been discovered; yet no place has been found where nature does not produce the necessaries of life. We hear of countries where the scorching rays of the sun have destroyed all verdure, and where the eye sees little but mountains and vast plains of sand: and there are countries which seldom experience the light of the sun, or feel the grateful warmth of his rays; where a winter, almost perpetual, torpifies, and where no culture calls to cheerful employment, nor fruits or harvest are ever seen. Yet in these both men and animals exist, without any want of nourishment: the productions that nature has denied them, because they would be either parched by the heat of the sun or destroyed by extreme cold, are supplied by gifts adapted to the nature of the climate, and suitable for the nourishment of the inhabitants; who collect with care what nature presents to them, and know how to appropriate it, so as to obtain all that is necessary to their subsistence, or essential to their convenience.

In Lapland, the providence of God has so ordered, that what at first seems to be an evil, and certainly is very troublesome to the people, is the means of their support. The Laplanders are infested with innumerable multitudes of flies, furnished with stings, from which they defend themselves by raising in their huts a continual thick smoke, and besmearing their faces with pitch. These insects deposit their eggs on the water, which attract a great number of water-fowl that feed on them, and, being taken by the Laplanders, become their principal source of nourishment. The Greenlanders generally prefer animal to vegetable food, and very few vegetables grow in these sterile countries. There are, however, some plants, of which the inhabitants make great use, particularly sorrel, angelica, and scurvy-grass (cochlearia). Their principal nutriment is a species of fish called augmarset, much resembling the kind known by the name of miller's-thumb. When they have dried these upon the rocks, they constantly use them instead of bread, and preserve them for the winter in large sacks of leather, or wrapped in old garments. In Iceland, where also, because of the intense cold, there is no agriculture, the people eat dried fish instead of bread. The Dalecarlians, who inhabit the northern parts of Sweden, having no corn, make their bread of the bark of the pine and birch, and a certain root which grows in the marshes. The inhabitants of Kamschatka feed on the stem of the acanthus, which they first peel and then eat raw. The natives of Siberia make use of the roots of a species of lily, which they call martagon.

Adorable Father of mankind! how tender and merciful are thy cares for our preservation! With what goodness thou hast distributed to every part of the earth all that is necessary for the subsistence of thy creatures! Thy wisdom knew, before the foundation of the world, the dangers to which the life of man must be continually exposed, and ordained that he should every-where be supported.* Such relations, connections, intercourse, and communications, are established amongst the inhabitants of the earth, that people separated by the most distant seas labour for the convenience and support of each other.

We have likewise abundant cause to be thankful that we are so constituted as not to be limited to any particular kind of food, but are capable of using every species of aliment. And let us adore the inexpressible goodness of God, who has permitted us to receive his all-sustaining word; for which, and the various blessings and abundant means of subsistence with which his liberal hand has supplied us, let us offer up praise and thanksgiving with our latest breath, and for ever rejoice in his holy name!

APRIL I.

Hymn for the Commencement of Spring.

PRAISE ye the Lord, who has created the spring, who has adorned the face of the earth! To him belongeth all glory, honour, and power; for he maketh the beings which he has formed happy. The Lord has created, has preserved, and still loves and blesses, this world, the work of his hands: celebrate him all ye creatures!

In those days of felicity when man had not yet rebelled against his Maker, free from the pollutions of sin and its consequences, the earth resembled a paradise. Even now, though deformed by sin, and the reward of sin, we still see the hand of the Divine Author, and the earth is still the entrance to Heaven.

The fields, which have so long seemed dead, begin to revive and bloom; every day produces new blessings, and all created beings rejoice in their existence. The face of the earth is renewed; the sky is pure and serene; the mountains, the valleys, and the groves, resound with melody: and the Lord of the creation regards with an eye of mercy all his works.

But the fields are destitute of intelligence, and the irrational part of the creation know not the Being which formed them; man alone rejoices in his God, experiences his existence, and aspires to live for ever in his presence.

Let us celebrate the God of nature: he is nigh unto us: let all his hosts praise him! He is present every-where; in heaven, on earth, and in the seas. Let us for ever glorify him and sing his praises; for wherever we are, there also He is, ever near us by his power, his love, and his bounty!

The Lord commandeth the clouds to extend themselves over the fields; he watereth the thirsty land, that man may be enriched by his gifts. He commandeth the hail, the winds, and the dew, to become sources of happiness to mankind.

Even when the tempest rises, and the thunder peals terror through the heart of man, fertility and blessedness spring forth out of the bosom of storms and darkness. The light of the sun returns with increased splendour, and songs of joy and harmony succeed the roaring of the thunder.

It is in the Lord alone we find true happiness; in Him who is the Author of all good, who enableth us to derive salvation from the eternal springs of light and truth. And blessed is the mortal who submits to his government with resignation, and who is prepared to leave this world, in the joyful hope of being united to his Father and Creator by the redeeming power of Jesus Christ!

Abuse of Animals.

MEN abuse animals in so many different ways, that it is very difficult to enumerate all of them; and for the sake of perspicuity, I shall at present comprehend them in two classes. They are generally too much or too little valued; and in either case we act with impropriety. On the one hand, we have too little regard for the brute creation, when, presuming upon the authority God has given us over them, we exercise that power with arrogance and caprice. But allowing that we possessed this absolute dominion over them, is it just that we should exert our right with cruelty and tyranny? All who are not the slaves of passion, and are not corrupted by vicious habits, are naturally inclined to have compassion for every being that has life and feeling. This disposition does honour to human nature, and is so deeply implanted in our hearts, that he who has unfortunately stifled it is regarded with aversion, and shows how much he has fallen beneath the dignity of man. He will then have to make but one more step to become a monster; which is, to deny to men the compassion he refuses to brutes.

Experience justifies me in this assertion, and my readers will recollect examples enough of this species of ferocity. History furnishes us with many: we there find that the people who delighted in the combats of animals were remarkable for their cruelty towards their fellow-creatures, so true is it that our treatment of animals has an influence upon our moral character, as well as upon the mildness of our manners. Though it may be urged we have the right of destroying hurtful animals, will it follow that we have a right to tear from them, without compassion or remorse, that life which is so dear to all creatures? or, when necessity obliges us to take such a step, are we justified in taking a pleasure and barbarous joy in their sufferings; and, in depriving them of life, making them suffer a thousand tortures more cruel than death itself? I grant that the Creator has given us animals to serve our necessities, to conduce to our comforts and pleasures, and to relieve our toil by their labour; but it does not thence follow that we are to fatigue them unnecessarily, or to make them labour beyond their strength, refuse them that subsistence which is their due, or increase their sufferings by hard treatment.

This is sufficient to show the nature of the first species of abuse; but some people fall into the opposite extreme. Those animals of a social nature which are most connected with us, which live in our houses and are continually in our presence, which amuse and contribute to our diversion or utility, sometimes inspire us with a ridiculous and extravagant affection. I am grieved to say that there are both men and women so

STURM'S REFLECTIONS

When the delightful prospect of the rising sun renews each morning in our souls the gratitude and admiration due to the sublime author of the Universe. *April II.*

absurd as to love their domestic animals to such an extravagant degree, as to sacrifice to them those essential duties which they owe to their fellow-creatures. War may send its plagues through nations, and whole armies destroy each other, without making any impression upon the lady who, some days after, is inconsolable for the loss of her lap-dog. Much more might be said upon this subject; however, I will not weary my readers with such absurdities, but conclude this meditation with a very important remark. Parents, and those who are entrusted with the care and education of children, in their presence cannot too scrupulously avoid every abuse of animals. It is the more necessary to insist upon this, because the practice of it is very often neglected, and the children influenced by such pernicious examples, often imbibe the worst of passions. No animal should be put to death in their presence; much less should they be commissioned to perform a task of such cruelty. Let them always be accustomed to treat animals as beings which have life and feeling, and towards which they have certain duties to observe. Whilst we thus prevent their feelings from becoming brutified, let us guard against their being too much attached to animals, to which they are often very much inclined; but let us teach our children the right method of behaviour to this part of the creation, that they may, from their earliest infancy, be accustomed to acknowledge, even in these creatures, the visible impression of the Divine Perfections.

APRIL II.

Motion of the Earth.

When the delightful spectacle of the rising sun renews each morning in our souls the gratitude and admiration which we owe to the sublime Author of the universe, we may at the same time observe that the situation of this magnificent view changes with the seasons. Thus, if we mark the place where the sun rises in spring and in autumn, we shall find in summer it is more to the north, and in winter more to the south. It is reasonable to conclude that some motion must occasion these changes; and many naturally suppose it is the sun which moves, and thus occasions us to see it sometimes on one side, sometimes on the other. But as the same phenomena would take place though the sun were to remain immoveable and the earth to turn round it, and that we neither perceived the motion of the sun nor that of the earth, we ought to give less weight to our own vague conjectures than to the repeated observations that astronomers have made in the heavens; which sufficiently prove that the rotatory motion of the earth alone effects the changes we remark in the situation of the sun.

In the first place, let us represent to ourselves the immense space in which the heavenly bodies are placed: it is either empty, or contains a very subtle fluid called ether, in which this globe, and all the planets composing the solar system, move in their different orbits; in the centre of which shines most conspicuously the sun, of whose grandeur above all the planetary system we have spoken in a preceding discourse. The gravity which our globe has in common with all other bodies directs it towards the centre, or the sun attracts the earth by the superior force which greater bodies possess over smaller, and by which the latter are attracted; so that, as the earth tends to fly from the sun, and is counteracted by the superior attractions of that luminary: by this means the earth is made to describe a circle round the sun, somewhat analogous to the curve described by a cannon-ball; which, though it soon falls to the earth, yet might prolong its course for the space of some miles, if it had been projected from the top of a high mountain. Suppose the elevation were still greater, it would fly proportionably farther; continue adding to this imaginary height, and it would go as far as our Antipodes, in order to return to the point whence it set out.

All these effects take place from the laws of gravitation, or the attractive force of our globe; and in this manner is caused the revolution of the earth round the sun. The orbit it describes is not, however, entirely circular, but an ellipsis, in one focus of which the sun is placed, by which arrangement we are farther from that star, at one period than at another. This orbit is 44,000 semi-diameters of our earth; and to make its revolution round the sun, the earth employs 365 days, 5 hours, 48 minutes, and 43 seconds, being the space of time which completes our year, after which revolution we find the sun in the same part of the firmament: for in every part of the earth's orbit we see the sun in the opposite side of the heavens, so that though the earth is continually moving, we imagine it is the sun which is in motion. In spring, the sun being equally distant from the two poles causes the equality of day and night. In summer, it is twenty-three degrees thirty minutes nearer the north, which occasions the greater length of our days; in autumn, it returns to an equal distance between the poles; and in winter, it is as far towards the south as in summer it was towards the north, thus occasioning our shortest days.

Such being the order and the arrangement of the great works of the creation, we have yet additional cause to admire and adore the wisdom and supreme goodness of the Creator. Each new intelligence that we gain of the Father of Nature, by his works, is precious; we every-where discover his greatness, and are led to acknowledge that he has perfected all with consummate wisdom. Let us then, with the fullest assurance and the most entire confidence, commit the conduct of our lives to Him who governs all things in the perfection of his wisdom; let us banish all doubt and mistrust, and surmount every fear, by faith in the Almighty Creator of the heavens and the earth; and may we be permitted to call him by the tender appellation of Father, through the redeeming grace of Christ!

APRIL III.

Abundant Riches of Nature.

To be convinced of the liberality with which nature distributes her gifts, it is sufficient to reflect upon the prodigious number of human beings who receive from this beneficent mother their support, clothing, and comforts of every kind. But as this daily happens, perhaps the impression made upon our hearts is feeble, or we disregard the blessings we are continually receiving: we will therefore consider those creatures which are partly formed for our use, and some of which are the objects of our contempt. This consideration will teach us, that every creature inhabiting the earth displays the merciful goodness of the Creator; and, if our hearts are still susceptible of feeling, must call upon us to glorify his holy name.

Innumerable multitudes of creatures inhabiting the air, the earth, and the waters, are daily indebted to nature for their subsistence. Even those animals which we ourselves feed properly owe their nourishment to her. The various species of fish all subsist without the help of man. The forests will produce acorns, the mountains grass, and the fields different

[illegible]

[illegible] tribes, and of species [illegible] which is so prodigious, that the [illegible] of a large kingdom would [illegible] during the space of [illegible] from her immense [illegible] for their subsistence, the [illegible] part of her dependants. The [illegible] centuries may [illegible] species shall be known. How numerous are the flies, and how many different species of insects float in the air, of whose stings we often feel the smart! The blood which they extract from us is a very uncertain and accidental kind of nourishment; we may reckon for one insect which is supported in this manner millions which have never tasted of blood, either human or of any other animal. On what then do these creatures live? There is scarcely a handful of earth that does not contain living insects, which are nourished in it by means of one another. In each drop of water creatures are discovered, whose modes of existence and multiplication are inconceivable.

Immensely rich as is nature in living creatures, she is not less fertile in the means of supporting them. From her every creature receives its shelter and aliment; for them she causes the grass to grow upon the earth, giving to each the choice of that food which is most suitable to its nature; and none amongst them is so despicable that she disdains to regard it with affection, and refuses to provide for its support. Herein is plainly manifested the power of the Almighty, which effects what all the people of the earth united together could not accomplish. He satisfies every living creature, and nourishes alike the birds of the air and the inhabitants of the waters and the earth. And will he do less for man? Whenever doubts and uncertainty arise, let us remember the multitude of beings which God daily supports! Let the fowls of the air, the wild beasts of the desert, and the millions of creatures which do not depend upon the care of man, teach us how to live contentedly. He who adorneth the flowers of the fields with their beauty who feedeth every animal, surely knows all our wants; and he heareth the prayers of the afflicted when uttered in the language of faith and purity of heart.

APRIL IV.

Sun-rise.

Have you ever witnessed that superb spectacle which the rising sun daily affords? Or has indolence, the love of sleep, or absolute indifference, prevented your contemplating this splendid phenomenon of nature? Perhaps you are of that class of beings who prefer the indulgence of a few more hours of sleep, to the gratification of seeing the east illumined by the first rays of the sun; or you are of the opinion of those who, satisfied that the sun is present to enlighten and to cheer the earth, never trouble themselves with reflecting upon the cause of such an effect. Or perhaps you are like millions of people who daily see this grand spectacle without emotion, and without forming any idea of it, but who pass it by without regard or reflection. To whichever class you belong, suffer yourself at length to be roused from your state of insensibility, and learn what thoughts the view of the rising sun ought to excite in your mind.

There is no spectacle in nature more grand and beautiful than the rising sun; before which, the most magnificent dress that human art can prepare, the most splendid decorations and ornamental designs of costly palaces, fade away and are nothing. At first the eastern region of heaven, clothed in the purple of Aurora, announces the approach of the sun. The sky gradually assumes the tints of the rose, and soon flames with a fiery brilliancy; then the rays of light piercing the clouds, the whole horizon becomes luminous, and the sun opens upon us in unrivalled splendour, gradually rising in the heavens; whilst every creature rejoicing seems to receive new life and being; the face of the earth is smiling, and the music of the birds fills the air; every animal is in motion, and expresses its joy by playful gambols and increased animation.

May the aspirations of my soul be raised to the throne of God, and the songs of my praise ascend up to Heaven, the seat of Him at whose command the sun first rose, and whose hand still directs his annual and diurnal course; from which result the revolution of day and night, and the regular succession of the seasons. Raise thyself, O my soul! to the Father of Glory, and celebrate his majesty; acknowledge thy dependence upon him, and celebrate his praise by actions which are pleasing in his sight! Behold! all nature proclaims order and harmonious regularity. The sun and all the stars accomplish their course; each season brings forth its fruits, and every day renews the splendour of the sun; and shall we be the only creatures who neglect to praise the Creator, by the virtue of our actions and the integrity of our conduct? Let the propriety of our lives and the fervency of our piety exalt the goodness of God, and teach the infidel how great and worthy of admiration is that Deity which he professes to despise; and let the peaceful calm and purity of our minds teach the vicious man the beauty of holiness, and the mild and merciful nature of that God before whom he trembles. Let us act towards our fellow-creatures as God does towards us, and be to them what the sun is to the whole universe. As he daily diffuses his benign influence over the earth; as he shines upon the ungrateful as upon the righteous; and as he gilds the bosom of the valley as well as the lofty summit of the mountain; so let our lives be useful, beneficent, and consolatory to all our fellow-creatures! May each returning day renew the charitable emotions of our heart, and may we do all the good in our power, and endeavour so to live and to act, that our lives shall be a blessing to mankind!

APRIL V.

Curious Structure of the Ear.

ALTHOUGH the ear is less beautiful than the eye, its conformation is as well adapted to its design, and it is equally admirable and worthy of the Creator. The position of the ear bespeaks much wisdom; for it is placed in the most convenient part of the body, near to the brain, the common seat of all the senses. The exterior form of the ear merits considerable attention; its substance is between the flexible softness of flesh and the firmness of bone, which prevents the inconvenience that would have arisen had it been either entirely muscular or wholly formed of solid bone. It is therefore cartilaginous, possessing firmness, folds, and smoothness, so adapted as to reflect sound; for the chief use of the external part is to collect the vibrations of the air, and transmit them to the orifice of the ear.

The internal structure of this organ is still more remarkable. Within the cavity of the ear is an opening called the meatus auditorius, or auditory canal, the entrance to which is defended by small hairs, which prevent insects and small particles of extraneous matter penetrating into it; for which purpose there is also secreted a bitter ceruminons matter, called ear-wax. The auditory canal is terminated obliquely by a membrane, generally known by the name of drum, which instrument it in some degree resembles; for within the cavity of the auditory canal is a kind of bony ring, over which the membrana tympani is stretched. In contact with this membrane, on the inner side, is a small bone, called malleus, or the hammer, against which it strikes when agitated by the vibrations of sound. Connected with these are two small muscles; one, by stretching the membrane, adapts it to be more easily acted upon by soft and low sounds; the other, by relaxing, prepares it for those which are very loud. Besides the malleus, there are some other very small and remarkable bones, called incus or the anvil, os orbiculare or orbicular bone, and the stapes or stirrup: their use is to assist in conveying the sounds received upon the membrana tympani. Behind the cavity of the drum is an opening, called the Eustachian tube, which begins at the back part of the mouth with an orifice, which diminishes in size as the tube passes towards the ear, where it becomes bony; by this means sounds may be conveyed to the ear through the mouth, and it facilitates the vibrations of the membrane by the admission of air. We may next observe the cochlea, which somewhat resembles the shell of a snail, whence its name; its cavity winds in a spiral direction, and is divided into two by a thin spiral lamina; and lastly is the auditory nerve, which terminates in the brain.

The faculty of hearing is worthy of the utmost admiration and attention: by putting in motion a very small portion of air, without even being conscious of its moving, we have the power of communicating to each other our thoughts, desires, and conceptions. But to render the action of air in the propagation of sound more intelligible, we must recollect that the air is not a solid but a fluid body. Throw a stone into a smooth stream of water, and there will take place undulations, which will be extended more or less according to the degree of force with which the stone was impelled. Conceive then that when a word is uttered in the air, a similar effect takes place in that element as is produced by the stone in the water. During the action of speaking, the air is expelled from the mouth with more or less force: this communicates an undulatory motion to the external air which it meets; and these undulations of the air entering the cavity of the ear, the external parts of which are peculiarly adapted to receive them, strike upon the tympanum or drum, by which means it is shaken, and receives a trembling motion; the vibration is communicated to the malleus, the bone immediately in contact with the membrane, and from it to the other bones; the last of which, the stapes or stirrup, adhering to the fenestra ovalis, or oval orifice, causes it to vibrate; the trembling of which is communicated to a portion of water contained in the cavity called the vestibulum, and in the semicircular canals, causing a general tremor in the nervous expansion contained therein, which is transmitted to the brain: and the mind is thus informed of the presence of sound, and feels a sensation proportioned to the force or to the weakness of the impression that is made.

What great cause we have to rejoice in possessing the faculty of hearing; for without it our state would be most wretched and deplorable; in some respects more sorrowful than the loss of sight: had we been born deaf, we could not have acquired knowledge sufficient to enable us to pursue any art or science! Let us never behold those who have the misfortune to be deaf without endeavouring better to estimate the gift of which they are deprived and which we enjoy, or without praising the goodness of God, which has granted it to us; and the best way we can testify our gratitude is to make a proper use of this important blessing.

APRIL VI.

The Milky Way.

If we observe the heavens during a clear night we discover a pale irregular light, and a number of stars, whose mingled rays form the luminous tract which is called the Milky Way. These stars are at too great a distance to be perceived by the naked eye; and amongst those which are visible with a telescope, there are spaces apparently filled with others in immense numbers, though not distinctly perceptible through a telescope. Though the number already discovered is prodigious, if we could make our observations from another side of the globe, nearer to the antarctic pole, we should be able to make still more discoveries, and see a number of stars which have never appeared upon our hemisphere; and yet we should not even then be able to discover the half, or the thousandth part, of those radiant bodies which shine in the immense firmament of heaven.

All the stars which we perceive in the milky way appear no more than so many luminous points, though each one may be much larger than the whole terraqueous globe. If we use instruments of the utmost power, they never appear larger then when seen by the naked eye. Were an inhabitant of this earth to ascend into the air one hundred and sixty millions of miles, the fixed stars would still appear no larger than luminous specks. Incredible as this assertion may appear, it is not a chimerical idea, but a fact which is effectively proved; for about the 10th of December we are more than one hundred and sixty millions of miles nearer the northern part of the heavens than we are on the 10th of June; and yet we never perceive any increase of magnitude in the stars.

The milky way, though little compared with the rest of the heavens, is amply sufficient to manifest the grandeur of the Supreme Being; and each one of the stars we there discover displays the wisdom and goodness of the Almighty. And what are these stars in comparison of the immense number of worlds revolving in the firmament of heaven? Reason herself is confounded in the contemplation, and lost in admiration: we can only wonder and adore.

Often then as we behold the starry sky, let us raise our souls to thee, O adorable Creator! and confess with shame how seldom we have thought of thee; how little we have reverenced thy grandeur or praised thy majesty! Pardon our insensibility, and forgive our ingratitude, O God! Loose these souls bound by earthly ties, and raise them to thyself, O Creator of heaven and earth! Suffer us to humble ourselves at thy feet, deeply convinced of our littleness and unworthiness! Then may we be comforted in our contrition with the glorious hope, that our redeemed souls will hereafter soar beyond the region of the stars in endless felicity!

APRIL VII.

Germination of Plants.

THE vegetable kingdom is a vast field, where the attentive observer may contemplate the boundless power and omnipotent wisdom of the Creator. Though we should live upon the earth for the space of a hundred years, and though we were to dedicate every day to the study of a particular plant, at the end of our career there would still remain many things that we had not perceived, or had not been able sufficiently to observe. Let us reflect upon the production of plants, and examine their internal structure, and the conformation of their different parts; let us reflect upon the simplicity and diversity discoverable in them, from the least blade of grass to the most lofty oak; and endeavour to become acquainted with the nature of their growth, the manner in which they are propagated, how they are preserved, and the different properties by which they are useful to the animal creation. Each of these articles will sufficiently employ our faculties, and teach us the infinite power and merciful goodness of the Creator. We shall every-where discover with admiration the most wonderful order and incomprehensibly beneficial designs.

Though we were to know no more of plants than the phenomena which every eye may distinguish; though we only knew that a grain of corn, when sown in the earth, at first shoots forth a root into the soil; then a stem upwards, which pierces the surface, and bears branches, leaves, and fruit, in which are included the germs of new plants; we should yet discover sufficient to convince us of the profound wisdom of the Creator. Let us attentively consider all the changes which a grain of wheat undergoes in the earth: it is sown at a certain time, which is all we can do to assist its progress; but nature is more active. As soon as it has acquired the necessary degree of humidity from the earth, it swells; the external coat or skin which concealed the root, stem, and leaves, opens; the root bursts forth and penetrates into the earth, where it derives nourishment for the stem, which now makes an effort to raise itself up above the surface of the ground. When it has sprung up, it gradually increases till it has arrived at its proper height; it then unfolds its leaves, which at first are white, then yellow, and at length are tinged with a beautiful green. If we confine ourselves to the examination of this grain of corn, so necessary to our subsistence, what admirable wisdom we shall observe! Immediately as the tunic which enclosed the germ is rent, and the root has penetrated the earth, the stem ventures to spring up in the form of a fine and delicate filament, which, however feeble it may appear, is able to contend with the inclemency of the air. It gradually increases in size till it produces the ear of corn, the sight of which is so grateful, and where the fruit is enclosed in leaves which serve as a sheath till it is strong enough to break through them.

The fields where corn is sown may serve to remind us of fields sown with a very different kind of seed. We may regard our bodies, when quietly deposited in the earth, as seeds which are to spring up and be matured in eternity. We have as little reason to expect that a grain of wheat placed in the ground will produce an ear of corn, as that our bodies reduced to dust shall become glorious bodies of light and immortality. The time will come, when the seed shall unfold itself, our dust will be reanimated, and the righteous will live in Christ. In that great day, what will become of you who despise our faith? It is true, our bodies must dissolve and turn to dust; but they will not always remain under the influence of death. The soul of the just man made perfect will repose from the labours of this life, in the bosom of his God full of happiness and adoration. Eye hath not seen, nor ear heard, neither hath the imagination of man conceived, a state of salvation so blessed and glorious as this!

APRIL VIII.

The azure Colour of the Sky.

To judge from the first impression of our senses, we might suppose that the heaven above us was an immense vault of blue studded with brilliants; such an opinion, however, will only be retained by the most ignorant of men, though many with some title to understanding have very absurd notions of the sky. The reason why it appears of an azure colour is to be ascribed to the atmosphere not being perfectly transparent. Were it possible to ascend very high above the surface of the earth, the air would be found much more rare, till, if we were to ascend still higher, it would become incapable of assisting in respiration, and at length would entirely cease, when we should have reached the region of pure ether.

The higher the mountains are which we ascend, the lighter does the atmosphere become, and the azure colour of the heavens fainter. And if it were possible to ascend to the regions of pure ether, the blue colour would entirely disappear, the sky would appear black as night; for so do those objects appear which do not reflect the rays of light. Consequently, if the air which surrounds us was as transparent as ether, the sky could not appear blue. The air is filled with innumerable minute particles, which when illumined by the sun receive a motion, in consequence of which new rays are produced; and these particles, of themselves obscure, become visible to us when they are thus illumed. Their colour is blue; hence a forest, which appears green when we are nigh to it, seems to be more and more blue as we recede from it. However pale and subtle are the blue rays of air, so many of them strike upon our eyes at the same instant, that they produce all the effects of a dark blue.

What has now been advanced may induce us to consider the heavens in a different point of view than we have hitherto done. From it we may conclude that there is not a phenomenon of nature, not even the colour of the sky, in which we do not discover order, utility, and some certain end. If green is the most agreeable colour that could be chosen to beautify the earth, the azure of the heavens is no less beautiful and pleasing. How dreadful is the aspect of heaven, when storms rave and tempests lower! But what a beauty and simplicity is seen when it is in a state of serenity and repose! The charms it presents increase the longer we contemplate it, and we are never weary with the pleasing view; the rejoiced soul raises itself to the Being which has thus adorned the heavens, and swells with grateful joy in the contemplation of his power displayed in beauty.

ARPIL IX.

Necessity and Use of Air.

The earth is surrounded by a fluid, called air, which materially contributes to its life, beauty, and preservation. All the changes we observe in the different beings upon our globe depend upon the air. It is essential to the existence of animals, for few of them can survive a minute's privation of this fluid. Not only land-animals, and those which inhabit the air, cannot live without it; but those which dwell beneath the waters equally require a renovation of air. That birds may be enabled to fly, they must be supported by the air; and on this account we find their lungs are so constructed, that the air can pass by orifices into their bodies, and their bones are cellular or porous; by which means they are much lighter, and more easily float as well as fly in the air. Plants also require air to forward their growth and vegetation; hence they are provided with numerous vessels for its reception and transmission.

Nothing is more easy than to enumerate proofs of the necessity and use of air; we shall at present confine our attention to one only, which will sufficiently illustrate our assertion. If air did not exist, there would be no twilight before sun-rise; the sun would suddenly flame above the horizon bright as it noon-day; its aspect would not be changed till the moment in which it disappeared to leave us in total darkness.. It is true, the sun would strike us with a most vivid light though there was no air, but it would resemble a fire in blazing during the night in an open country; it would some sense be day, whilst the sun and the objects which immediately surround us were vissible, but all the rays which fell on bodies placed at a certain distance would be reflected in a right line, and lost in the extent of the heavens. Thus, though the sun was placed immediately over our heads, we might yet experience a sort of night, if the atmosphere did not intervene between us and the luminary.

To recapitulate then all the advantages which the air produces to our globe: it preserves life, as being the principle of respiration to living creatures; through its medium winged animals fly, and those which inhabit the waters are enabled to swim; it serves for the propagation of sound, and conduces to the formation of vapours, rain, and wind; it is essential to the fertilisation of the earth, favours the vegetation of plants, and by its agitation disperses the noxious vapours which exhale from different bodies. If air did not surround our globe, the light and heat of the sun would be insufficient for our purposes; sounds could not be transmitted, consequently our organs of speech would be useless: in short, the advantages which the air produces to the human race are without number; and if we accustomed ourselves to contemplate with an attentive mind this great agent of nature, we should be more and more led to exalt the works and the glory of God. If any have hitherto neglected this pleasing duty by having taken only a superficial view of the creation, and whilst they enjoyed the blessings of nature their hearts have not bowed before the presence of God, I beseech them, as they value their own happiness and well-being, to endeavour in future to become attentive spectators and observers of the works of God: for they who consider them with attention, and investigate them with ardour, are rewarded with a pleasure pure and unceasing: the study of nature is a source of everlasting joy, the springs of which never fail.

APRIL X.

Diversity of Soil.

THE soil of the earth is not the same in all places; the upper bed is generally formed of a black, friable, and rich earth, which being mixed with the remains of plants and animal matter, becomes the nourishing parent of the many thousands of vegetables which enrich our globe. This bed often varies in quality; at one place it is light and sandy, at another clayey and heavy; sometimes it is moist, sometimes dry; here warm, and there cold. Hence we find that plants and herbs, which in some countries grow spontaneously, in others will not succeed without art and cultivation; and this diversity of soil is also frequently the cause why vegetables of the same species differ amongst themselves, according to the nature of the soil in which they grow. In this the wisdom of the Creator is conspicuous; if all soils were alike, and possessed the same qualities and constituent parts, we should be deprived of many thousands of vegetables, as each species of plants requires a soil analogous to its nature. Some require a soil which is dry, others one that is moist; to some warmth is necessary, and to others cold; some flourish better in the shade, whilst others only expand in the sun; some again thrive on mountains, whilst the greater number prefer the valleys. Hence it happens that every country has a certain number of plants peculiar to it, and which do not thrive so well in others. If the elder is transplanted into a sandy soil, and the willow into one which is dry and rich, it will be found that neither will succeed so well in a soil different from that to which it has been accustomed. Thus nature provides for each, that soil which is best adapted for its culture, each species growing in the soil most analogous to its constitution. It is true that art often forces nature to produce according to our wishes; but the effects of this opposition do not always repay our trouble and expence, and nature, in the end, is found superior to all the researches of skill and operations of art.

As the soil is infinitely varied, so also is the character and disposition of men. There are some whose hearts are too insensible to profit by instruction, whom no motive affects, whom no truth, however forcible and evident, awakens from their stupidity. Such a character may be compared to a stony soil, which alike resists the temperature of the air and the assiduity of culture; a character little superior is that where continual levity predominates. People of this class may receive the salutary impressions of religion and piety; but, if the least obstacle impedes, they are discouraged, and their zeal vanishes as quick as their good resolutions. Such as these are those timid and frivolous people who reject truth because they are afraid to receive it, and in whom piety cannot take root because there is no depth; they resemble the light and dry soils where nothing arrives at maturity, where the scorching heat of the sun dries up every thing, because the soil does not afford the succulent juices necessary to the nourishment of the plants. Happy are they in whom, as in a rich soil, the seeds of virtue mature into an abundant harvest of choice fruits!

On this diversity of disposition, among men, depends more or less the effect which the sacred word produces in their hearts. In vain may the sower sow the best seed, and useless will be his care, if the soil which receives it has not the requisite qualities: the excellence of the seed can never alter the sterility of the soil; which, if so hard and unyielding that the seed cannot enter, or so sandy that it cannot take root, or so stony as to choak it up, will never bring forth good fruit. To whichever class we may belong, whether the impenetrable hardness of our hearts resists every impulse, or the frivolity of our disposition admit of no steady pursuit, we shall readily acknowledge that before the seeds of truth and of virtue can ripen into maturity and produce fruit, before we can attain the enjoyment of felicity and blessed peace, our heart must be changed. To effect which must be the work of the holy spirit; and may the Almighty in his condescension assist us, and enable us to become like the fruitful soil, and, faithful to our vocation, bring forth abundance of fruit, that, rich in good works, we may preserve the gift of his grace in a good and generous heart.

APRIL XI.

Necessity of Repose during the Night.

Labour is useful and necessary to man; upon it depends much of the happiness and convenience of life, and every one, according to his state and condition, should apply himself to it. But by incessant exertion human strength would be speedily exhausted, and man would become incapable of using his bodily powers, or of exerting the faculties of his mind, if nature did not, by continually supplying him with this new vigour and activity, enable him to fulfil the duties of his vocation. As we daily lose a portion of our nutritious juices, we should soon become exhausted, and suffer a fatal consumption, was not our vitality continually renewed. This is supposed to be effected, and the ability to labour supported, by a matter inconceivably tenuid and penetrating, secreted from the [illegible], and called the nervous fluid, which supports the action of the brain and muscles. But the continual dissipation of this [illegible] would soon exhaust it, and man would become languid and enfeebled, unless the waste was continually repaired. If the body was constantly in a state of [illegible], our aliment could be digested, nor nutrition [illegible] be regularly distributed to every part.

It is necessary then that the labour of the head, as well as the exertion of the body, be for a time suspended, that our wearied nature may regain strength and vigour. Sleep renders us this important service: as night approaches, the powers which have been exerted during the day diminish, our vitality seems to be weakened, and we are irresistibly urged to sleep; during which state, when the activity of thought and [*] the labour of our hands have ceased, our fatigued body acquires new force and fresh vigour. This renovation is as necessary to the body as to the mind;

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[*] Whatever is the cause of that excitement which stimulates to action, or of the renovation of exhausted strength, the nervous fluid so much talked of has never been discovered; we merely know that the nerves are essential to sensation and life.—E.

by it our limbs are rendered capable of the greatest alertness, and our mind is enabled to undergo new exertions by its increased activity and the reanimation of all the intellectual faculties.

How culpable are those who, from trifling views, a sordid interest, or the gratification of their passions, deny themselves the necessary portion of sleep! They interrupt the order of nature, which has been established for their good; they destroy their gaiety of heart, enervate their bodily strength, and hasten the short period of their existence by inducing a premature old age. Why should we be so foolish as to deprive ourselves of a blessing which the bountiful favour of Heaven bestows upon all descriptions of men, upon the poor as well as the rich, upon the learned as upon the ignorant? Why should we shorten our days by refusing the gift which nature offers of prolonging our life by the renovating repose of sleep. The nights may come, when, far from enjoying the sweet refreshment of sleep, tossing on the bed of anguish, we shall be counting the tedious hours as they heavily pass over. Few know or estimate the value of sleep till they have wished for it in vain; and there are nightly many thousands of human beings who, afflicted with diseases or mental agitation, know not the blessing of this sweet restorer of nature.

APRIL XII.

Magnitude of the Earth.

To determine the exact size of the earth is attended with considerable difficulty: though there is in fact but one longitude, there are two latitudes, the north and the south, both beginning at the equator; the one extending as far north as the arctic pole, the other south to the antarctic pole. No one has yet been able to penetrate as far as either pole: for the mountains of ice in Greenland, and the northern sea, have always impeded on the north; and the south is not more accessible. However, by the labours of geometricians, we are enabled pretty nearly to ascertain the dimensions of our globe; and according to the most exact calculations, the surface of the earth contains 199 millions, 512 thousand, 595 square miles. The seas and unknown parts, by a measurement of the best maps, contain 160 millions, 522 thousand, and 26 square miles; and the inhabited parts 38 millions, 990 thousand, 569 square miles, in the following proportion. Europe 4 millions, 456 thousand, and 65; Asia 10 millions, 768 thousand, 823; Africa 9 millions, 651 thousand, 807; America 14 millions, 110 thousand, 874*: which calculations prove that scarcely a third part of the globe is inhabited.

It has been calculated that there might be at least three thousand millions of men upon the earth at once, whilst in reality there are no more than one thousand and eighty millions; of which there are in Asia 650 millions, in Africa 150, in America 150, and in Europe 130 millions. Supposing then that the earth is inhabited by about one thousand millions, and that thirty-three years make a generation, it would follow that in the above space of time a thousand millions will die; consequently the number of those who die upon the earth amounts each year to 30 millions, every day to about 83,400, every hour to 3475, and every minute to about 57. This calculation is very striking, and will naturally suggest the idea, that since the mortality of each year, and even of each minute, is so great, it is very probable that we may ourselves very soon increase the bills of mortality. At this very instant some one of our fellow-creatures has paid the debt of nature, and ere the lapse of another hour above three thousand more beings will have bid a final adieu to this state of existence. These considerations are awful, and should lead us to the most serious reflections; they should frequently induce us to reflect upon death, and prepare for eternity.

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* Ferguson's Astronomy.

Immense as the earth may appear, its magnitude sinks into nothing when compared with those spheres which revolve in the heavens; in comparison of the whole system of the universe, it is no more than as a grain of sand is to the most lofty mountain! How this thought raises my conceptions of the inexpressible grandeur of God, the infinite Creator of the heavens and the earth, in comparison of whom this world, and all the worlds we can conceive, with their multiplied inhabitants, are lighter than chaff before the wind, and of less account than the atoms playing in the sunbeams!

APRIL XIII.

Generation of Birds.

About this season of the year nature undergoes a general revolution, highly interesting and well deserving of our attention. This is the time when the joyful birds begin to build their nests and bring forth their tender young; an operation which, though renewed every year, is little regarded.

In each impregnated egg that has not yet been sat upon, a small spot is observed on the yolk, in the centre of which spot is a white circle extending upwards, and appearing to join some small vesicles. In the middle of this circle is a sort of fluid matter, in which swims the embryo of the future chick. It is composed of two lines or white threads, which sometimes appear to be separated from each other at their extremities, and between which a liquid substance is seen of a leaden colour. The extremity of the embryo is contained in a vesicle or small bag, surrounded by a ligament, in which the naval afterwards appears. The ligament is partly composed of a solid yellowish matter, and partly of a brown fluid, which is also surrounded by a white circle. These are the chief things observable in an impregnated egg before incubation.

When it has been under the hen about *twelve hours*, there appears in the lineaments of the embryo a humid matter, which has the form of a little head, and on which vesicles are seen that afterwards form the vertebræ of the back. In thirty hours the place of the navel appears covered with a number of little vessels, and the eyes begin to be distinguishable The two white threads, which in uniting have left still some space between them, enclose five vesicles, which are the matter of the brain and spinal marrow. The heart may next be observed, though it has not been ascertained whether the heart or the blood is first formed. However this may be, it is certain that the rudiments of the chick existed in the impregnated egg before incubation; and when it has been some time sat on, the vertebræ, the brain, the spinal marrow, the wings, and parts of the muscles, may be distinguished before we can perceive the heart, the blood, and the vessels. In thirty-six hours the navel is covered with a number of vessels, separated from each other by unequal spaces. The essential parts of the chick being thus developed, it continues to grow larger, and the parts become more distinct, till, in about twenty or one-and-twenty days, it is strong enough to break the shell in which it was enclosed.

We owe these discoveries to those naturalists who, by the assistance of the microscope, have hourly watched and remarked the progressive formation and developement of the chick. However, notwithstanding all the information we have derived from their observations, there still remain many mysteries which elude the most penetrating researches. How does the embryo gain entrance into the egg? and how does it acquire, by means of heat, which is all that it receives from the hen, life and growth? What power first puts in motion the essential parts of the chick, and what is that vivifying spirit which, penetrating through the shell, stimulates the heart into action? Who has inspired the birds with that instinct which teaches them to continue their species, and inform them their offspring is contained in the egg, upon which they patiently sit and endure every hardship during the period of incubation?

To these questions we can only answer with certainty, that as nothing can be attributed to blind chance, we look for the cause in the wisdom of God, which has ordered that some animals should not arrive at perfection till after they have left the womb of their mother, whilst others remain in it till all their parts are formed; and he who does not discover in the generation of birds the proof of a superior Being, will perceive it nowhere. O man! spectator of the glorious works of God, adore with me his marvellous wisdom, and see even in the meanest objects the impress of his ineffable goodness and power. He has created the birds of the air for thy advantage, pleasure, and nourishment.

APRIL XIV.

* *Prognostic Signs of the Weather.*

WINDS, heat, cold, rain, snow, fogs, drought, and many other changes in the temperature of the air, do not always depend on certain and regular causes. There are, however, some signs in nature which often indicate the kind of weather about to take place. The position of our globe with respect to the sun, which is known to us by the four seasons of the year; the changes of the moon, the period of which can be exactly determined; the influence which these heavenly bodies and the different planets in our system have upon the temperature, the agitation, and the serenity of the air, are immutable, and on them prognostics respecting the weather may be reasonably founded. The consequences drawn from these are less to be contemned, because they are established upon truth and confirmed by experience. From analogy we have a right from the past, under similar circumstances, to judge of the future. It is true a thousand contingencies may affect the temperature of the air with changes as great as they were unexpected; but we must remember that these accidental circumstances seldom exist for a length of time, and though they may occasion considerable alteration in the ordinary course of the weather, they only remain for a short space, and their operation is very limited: whilst, on the contrary, the changes of weather generally follow a certain order, governed by certain rules; and the attentive observer of nature, by comparing the experience of several years, will often be able to foresee them.

We seldom err when we suppose that the north and east winds will bring cold, the south wind heat, and the west rain; and that during the north-west wind it rains in summer and snows in winter. We may also conjecture with probability, that when the morning sky is red, there will be wind or rain in the course of the day; and that a sky tinged with streaks of red in the evening promises fair weather the following day. From the weather of spring we anticipate that of summer: if in the former we experience much fog, we may expect a wet summer; if in the spring there are great floods, we may be apprehensive in the summer of violent heats and multitudes of insects. When storms have been frequent in spring, we have no reason to fear the return of hoar-frosts.

But supposing that we had no power of predicting the weather, we might still be perfectly easy on that head: the variations of weather, considered as a whole depend upon fixed laws established by the Creator from the beginning of time; and we may with certainty assure ourselves, that, however unfavourable it may seem, every change of weather is advantageous to the earth, and contributes to its fertility. Let us then, in every alteration the temperature of the air undergoes, repose in confidence upon that God, who never acts but wisdom and mercy mark his progress; whose every dispensation is wise and beneficent, whether he rides in the whirlwind and directs the storm, or smiles in the beauty of serenity. All his ways declare his goodness, and all his paths display his glory; wisdom and benignity manifest him in all his works, and the continued experience of his benevolence evinces his heavenly care and fatherly love. Let us for ever bless and adore, whilst we admire with awe, the sublimity of his grandeur, and the incomprehensibility of his mercy; and from generation to generation, let every one enjoying the breath of life sing his praise and exalt his name.

ARPIL XV.

Position of the Sun.

THE sun is placed by the Creator in that part of the heavens which is best adapted to its nature, and to the great offices it performs. It possesses a determinate volume, and is placed in a space proportioned to the motions it was appointed to execute. It is fixed at a proper distance from those planets upon which it is to act: and this position, arranged so many thousands years ago, he has retained, uninfluenced by the wreck of empires and the revolutions of ages. Nothing short of infinite power could have effected such a miracle; nothing less than an Almighty God could have created this immense globe, placed it in a suitable situation, defined its limits, determined its motion, subjected it to invariable laws, and preserved it through the lapse of ages in that position and order which in the beginning he had prescribed to it. And the wisdom and advantages of this arrangement, whether we consider this earth alone, or the whole system of worlds encircling the sun, the experience of centuries amply testify.

The burning rays that issue from a globe of fire a million times larger than the earth must be inconceivably active, if in falling they continued close to each other; but as they separate more and more in proportion as the distance from the common centre increases, their force will be diminished in the ratio of their diverging. Had our earth been placed in a point where these rays acted upon it in a greater number, or at a less distance, the intensity of the heat could not have been endured; or had it been thrown to the very extremity of the solar system, it would have received only a faint light, and not warmth enough to ripen its fruits and ordinary productions. The sun then is placed in that part of the heavens where it can be most beneficial, by which it communicates to our world a light and heat sufficient to penetrate and vivify the earth by its salutary rays, rarify the atmosphere, and produce all those happy effects without which we should neither receive the benefits of dew and of rain, nor the blessings of clear and serene days. But arranged as it is, it causes the alternation of day and night, and the vicissitudes of the seasons.

It is not to the sun only, but to every planet and star that shines in the firmament, that God has allotted a place suited to its nature, and adapted to the ends it has to perform in the creation. Every human being has likewise a place assigned him in the creation, and certain duties to fulfil. And may we each attempt to act in our station, and perform the duties there allotted us, with as much exactitude and fidelity as that with which the sun throughout his course discharges his important functions, according to the immutable laws prescribed to him from the beginning of his creation! As the sun imparts his blessings freely to the whole earth, and all created beings; so let every one, according to his power and capacity, exert himself for the good of mankind, share and divide with his fellow-creatures the advantages he enjoys, communicate to the ignorant the knowledge which he may have acquired, impart strength and comfort to the feeble, and bountifully distribute to the indigent those blessings which the favour of Heaven has granted to him. The man who thus acts may feel a confidence that he is in some degree answering the great end of his creation.

APRIL XVI.

The Permanency of Corporeal Beings.

Nothing perishes in nature; from the beginning of the world to the present period not a single atom has been annihilated. The first groves produced by the power of God were clothed with rich verdure and beautiful leaves: these withered, fell, and ceased to be leaves; but the particles of which they were composed remained, and were converted into dust, clay, or earth. The matter of which the first leaves and herbs were formed still exists, and has lost none of its essential parts; and the constituent parts of the plants, which now flourish, will exist whilst the world shall endure. It is true the wood which we burn ceases to be wood; but its particles do not cease to exist, being dispersed into ashes, soot, and smoke. And though nature is subject to constant changes, every thing that is decomposed is regenerated, and nothing finally perishes.

We must not always judge from appearances: when revolutions and convulsions agitate the face of nature, we are induced to believe that many beings are totally destroyed; but this is an error, they are only differently modified, and become the materials which enter into the composition of other beings. The water which exhales in steam and vapour is not lost: it only leaves one place to increase in another. Thus what from want of information we regard as being entirely destroyed, has only undergone a change of parts; and the world, considered in the whole, is now what it was in the first day of its being, though many of its component parts have experienced very considerable alterations.

These considerations may induce us to reflect upon the revolutions our bodies may undergo in the grave; though they will entirely dissolve into dust, they will not be annihilated, but their component parts will continue to exist. The conviction of this truth may fortify us against the fear of the grave and the dread of corruption, whilst it will strengthen our belief in the resurrection.

"Why then shall my heart sink at the thought of the grave, or my mind suffer from the terror of annihilation? What is deposited in the tomb is not the only possession we have worthy of our regard and solicitude; it is merely the earthly tabernacle, which returns to its native dust, whilst the soul is incorruptible and endures for ever."

From the continual duration of corporeal particles, we may rationally conclude that the soul also is immortal. Seeing that none of our earthly parts can be annihilated, can we suppose that our souls should be the only created things which shall perish? Impossible! Sooner would the whole material world sink into annihilation, than one soul which has been redeemed by Christ Jesus should perish.

ARPIL XVII.

Advantages of Rain.

Rain is truly a gift from heaven, by means of which the blessings we receive from God are equally manifold and indispensable. Widely desolating as the effects of a continued drought would be to us, as extensively beneficial are the refreshing effects of showers upon the earth. Who can describe or even know all the advantages which result from them? Though we may not be able to describe all, we may at least consider some of the principal benefits afforded by rain.

The heat of the sun acts without interruption upon the earth and the different bodies upon its surface, and continually detaches from them subtle particles which fill the atmosphere in form of vapour. We should inspire along with the air those dangerous exhalations, if they were not from time to time precipitated by rain, which, by drawing them down upon the earth, purifies the air. It is not less useful to us in moderating the burning heat of the atmosphere; the reason of which is obvious, for the nearer the air is to the earth, the more it will be heated by the reflection of the sun's rays, and the farther it is from the earth the colder it becomes. The rain which falls from a high region brings a refreshing coolness to those below, the agreeable effects of which we experience as soon as it has fallen. To rain is partly owing the origin of fountains, wells, lakes, rivulets, and rivers. Every one is acquainted with what abundance these different waters are supplied in humid and rainy seasons, whilst during a long drought they evaporate and become dry.

But in order to estimate the utility and necessity of rain, we have only to observe how the earth and the different species of vegetables all languish for want of the fertile showers, which, when they have fallen, produce new life and reanimated beauty. Rain is in some respects the aliment of vegetables, and without it they would all perish: it moistens and softens the earth, which would otherwise become dry and hard from the action of the sun; it circulates in the minute vessels of plants and trees, and conveys to them those nutritious juices which support their life and promote their increase. When it washes the mountains it detaches from them a soft, rich, and friable earth, which it deposits in the valleys where it falls, and thus contributes to their fertility.

Thus we find every thing is arranged for our advantage, and the whole earth is filled with the bounty of Heaven. Such will be the conclusion that every thinking mind will draw from the above meditation; and still more to excite the adoration and praises of the Creator, I shall add some other reflections inspired by the subject of which we have been treating, and which I hope will make some impression upon the minds of my readers.

What spectacle is so noble as the azure vault of heaven viewed upon a calm serene day? Our hearts rejoice, and we regard it with admiration, till the thick clouds gather and darken all its beauties. This ought to teach us that however admirable were those charms which we had just contemplated with such delight, there are others which are infinitely greater, which no cloud can obscure or conceal, and which will amply reward us for the privation of every other. What then are all the beauties of nature united, in comparison of the lustre of that Being, the contemplation of whom will create the felicity of eternity, and form the chief delight of immortal spirits!

If at any time we are deprived of those things which cause our greatest pleasure here, we are more disposed to search in almighty goodness for that joy and felicity which we could not find in the perishable things of the world. And often those very privations which we regret, are productive of essential good. The clouds which sometimes veil the beauty of the heavens are the sources of those refreshing showers which fertilise the earth. When misfortune hangs heavy upon your soul, and adversity darkens your horizon; when your days are passed in tribulation and sorrow; remember there is an all-seeing Providence, who regards you as his children, and in the midst of evil is still working your good. Let us ever cheerfully submit to the dispensation of a God, who never acts but mercy tempers his justice, and wisdom regulates his motions; and he alone knows how to distribute his benefits, and where to shower down his blessings. At his command the clouds come from afar to execute his will, and who else shall dare to direct their course? Let no one then show his folly and impiety in arraigning the wisdom of Providence, and disputing the infinity of God!

APRIL XVIII.

Of Respiration.

RESPIRATION is the most principal and essential function of animal life: without it we could not exist; and speech and the various modulations of voice could not take place. It assists us in smelling, and imparts the beautiful florid colour to the blood, whilst at the same time it renews its vitality. But whence does this great source of life proceed? How is it that we breathe? The lungs are the chief organs by which we are enabled to inspire and expire the air. This viscus something resembles a bag, to the upper part of which is attached a tube, through which the air enters, and is distributed throughout the substance of the lungs by an immense number of minute ramifications of vessels. When the air is received into the lungs, the abdomen is distended, the ribs expand, and the lower part of the sternum or breast-bone advances forward. When we expel the air in the act of expiration, the abdomen is drawn in, the ribs are depressed, and the sternum retires towards the back.

To facilitate these operations, nature has admirably arranged the internal parts of the body; numerous muscles are continually employed during the act of respiration in dilating and contracting the cavity of the chest. The structure of the wind-pipe is very remarkable; at the upper part the entrance is defended by a valve, which during deglutition closes, and thus prevents any particles of matter entering to interrupt respiration and destroy life. The lower portion of this organ is equally curious, whether we consider the branches of the wind-pipe ramifying through the lungs, or the distribution of the veins and arteries which accompany them, that the blood they contain may receive the beneficial influence of the air.

Let us then bless the God of nature who has not only given us the faculty of respiration, but continues to preserve it free from interruption. How grateful ought we to be for such a merciful preservation, when so many accidents, without the protection of Providence, might destroy this source of life! Respiration is one of those blessings which we every moment enjoy, which claims all the gratitude we are capable of feeling, and which merits our constant attention; for were we more frequently to meditate upon the favours we daily receive from God, we might be enabled to contemplate with more profit and delight the whole of the creation. And may the great God of heaven, in whose hands are our lives, our breath, and all that we enjoy, be pleased to inspire our souls with those sentiments which dignify our nature, and give us the power as well as the will to celebrate his infinite goodness, and glorify his name by the purity of our actions!

APRIL XIX.

Proofs of the Goodness of God derived from the Works of Nature.

THE most frequent and striking phenomena which we see, either on the earth or in the air, have a manifest tendency to promote the advantage and the utility of the animal world. All that we see around us, above our heads, or beneath our feet, conduces to our comfort and to our pleasures. What is more necessary for the preservation of our life than food? and we find the earth every-where covered with alimentary matter. Herbs, grain, and fruits, the support of man and beast, are so abundantly diffused over the surface of the earth, that there is scarcely any part of it where animals may not find suitable nourishment. God has not confined his bounty merely to provide for our subsistence and to relieve our necessities, he has condescended to give us every thing that can contribute to our comfort and convenience. If it was only necessary that our lives should be preserved, water and common roots would be sufficient; but we are provided with a variety of aliment in a most liberal profusion: we do not experience in the Creator a rigid economist, who distributes to his dependents barely sufficient to preserve them from famishing: but we meet with a profusion of generosity and an abundance of gratifications.

Such is the munificence of God, that there is scarcely upon the face of the whole earth a single tree, herb, or plant, a lake, river, or marsh, that does not supply some living creature with shelter and nourishment. In a tree, for instance, are contained (besides the fruit) bark, leaves, and wood; and each of these parts supports an infinite multitude of creatures. Caterpillars and various insects feed upon the leaves: others upon the bark and wood: and there is nothing in nature that is not useful to some species of animal. How benevolent is that God who never forgets any of the creatures his hands have made, and who ever condescends to watch over and provide for their necessities.

What is more pleasing than the light? (said the wise man). "Truly the light is sweet, and it is a pleasant thing to see the sun," whose rays illumine the immense space of heaven, and through the day enlighten the earth. Light discovers to us all the riches of nature, which without it would be a desert, and all its beauties, would remain unknown. How graciously God has provided for the pleasure of our senses! He has chosen the softest and most beautiful colours to please and gratify the sight; experience teaches that those surfaces which reflect the blue and the green rays produce the least injury to the eyes, which can bear the sight of them longer than of any others. Hence we find the goodness of God has clothed the heavens with blue, and the earth with green; these colours are sufficiently vivid and gay to produce an agreeable impression upon the eye, whilst they are not bright enough to injure and fatigue. They have besides a sufficient variety of shades to distinguish objects, and prevent a too great uniformity.

Besides plants of every variety of green, the earth presents us with flowers of the most beautiful tints, which not only rejoice the eye by the pleasing diversity of their colours, but they perfume the air, and regale our smell with the most balmy and odoriferous scents. The ear also has its share of employment; it is gratified with the melodious warbling of the birds, that fill the air with the music of their songs.

With a heart overflowing with joy and gratitude, I venture, O God! to exalt thy name and to celebrate thy goodness. How precious is thy bounty! how loving and merciful thy paternal care and tender regard! None of thy creatures are concealed from thy presence, none of them are despised or disregarded; but all without exception are the objects of thy Providence, and the subjects of thy mercy and love. May thy beneficence and goodness ever be the subject of my meditations, and may my soul never cease to bless thy holy name, nor to rejoice in the songs of thy praise!

ARPIL XX.

Beneficial Influence of the Sun upon the Creation.

As the approach of spring we behold revolutions which should fill every attentive observer with admiration. Nature gradually resumes the life she seemed to have lost during the winter; the earth is overspread with verdure, and the trees open out in bloom. Every-where new generations of insects and young broods of animals spring forth, and, endowed with various degrees of instinct, rejoice in their existence. Every thing is animated, every thing revives; and the new life which is manifested in nature, in the vegetable and animal kingdoms, is produced by the return of warmth which awakens their productions, and puts in motion their recruited powers; the great cause of which is the sun, the source of life, sensation, and joy, whose vivifying rays are diffused through all nature. The grain and seeds fee his influence, and are unfolded in the bosom of the earth; by his power every plant and vegetable springs up and grows. His approach reanimates and strengthens every living creature; and all that live, breathe, feel, or vegetate, experience the influence of this powerful luminary.

What could we do if we were deprived of the light and heat of the sun? How dreary and sad would the earth appear, become an uninhabitable desert! And how miserable and comfortless would be the few creatures that could then exist! What a source of joy and pure pleasure should we be deprived of, if we were never more to feel the genial rays of the rising sun, nor witness the beauty of a serene sky! Nothing could compensate the want of the sun; the mildest night, the most temperate artificial heat, could not supply that vivifying influence which the light of the sun communicates to every being, and which is entirely different from, and far superior to, any terrestrial fire.

The salutary influence of the sun is well known to men and animals; an invalid, shut up in a warm chamber, with every assistance of art, will not gain in many weeks as much strength and vigour as he would in a few days from the mild influence of the sun in fine spring weather. Plants, which an artificial heat forces to spring up, never acquire that degree of strength which they do when they are acted upon by the rays of the sun: in this case every thing conspires to their perfection, whilst in these produced by artificial heat, we only perceive the weak and languishing efforts of art to supersede nature.

But could the sun exist, and communicate to us his heat and light, unless he had been formed and received his power and the ability of diffusing it upon the earth by an infinite God, the Creator of all things? To him alone we must look up as the Author of all the benefits we receive from that glorious luminary the sun, which in the plentitude of his power he has created, and in the perfection of his wisdom directs in its course, and supports the brilliancy of its fire and the splendour of its glory. Every morning he causes it to gild the chambers of the east, and to diffuse its enlivening influence over the face of the earth. Without God we should have neither sun, light, heat, nor spring; to him therefore my soul wishes to raise itself, and in thought to enjoy the presence of the immortal Being who created the sun; the genial warmth and pure light which dispose me to reflect upon this Parent of light and glory, this everlasting Fountain of all that is good, amiable and delightful. The ignorant heathens, blinded by superstition and perverted by prejudice, saw this glorious luminary disperse the shade of night, and illumine the eastern horizon; they witnessed the regions of the west nightly irradiated by his departing beams, and they prostrated themselves in adoration, worshipping as a God what is only an effect of divine power. But those who are favoured to participate in the light of truth know, that without the command of God no sun could exist to illumine and cheer the earth; that without his will no vegetation, life, and fruit, nor no comforts could be administered to the sons of men; and that the sun is merely the instrument of his goodness, the minister of his will, and the herald of his glory.

As the earth, deprived of the light and heat of the sun, would be a lifeless desert; so the heart of man deprived of the Son of truth and righteousness, would be destitute of joy and true felicity. To him we owe all the life, virtue, and happiness our souls possess; and without his saving power we should be like lifeless trunks, without leaves or fruit. As all nature languishes for the presence of the sun, and longs for his appearance, so may my soul long to feel the sweet and refreshing influence of Christ, which purifieth and strengtheneth the heart unto salvation, and is productive of every good work.

APRIL XXI.

Relations that all Creatures have for each other

The prodigious number of creatures on the earth merits our attention; and still more so the relative proportion between these and the relations which so link and connect this vast variety of beings, that they form one regular and perfect whole.

The extent of the animal kingdom is inconceivable, and yet every animal finds a sufficiency of nutriment: No species, however few in number, however persecuted, become extinct; and though many of them are the prey of others, the number of rapacious animals is not considerable; most of them are solitary, and they do not multiply rapidly. Those which are very numerous are satisfied with a moderate portion of food, and procure it without much art or labour. Many have enemies to contend with, which prevent them from increasing too much; and some weak and timid animals supply in number what they want in strength, or escape from their adversaries by the artifices of cunning and the dexterity of address. We may also remark, that for the better preservation and multiplication of the species, the proportion between the two sexes is so equal, that every animal finds a mate with which it may consort.

The mineral kingdom is subservient to the preservation of the vegetable, and both of them tend to the advantage of man. The most useful plants, as wheat, &c. are most easily multiplied, are less liable to spoil, and grow wherever there are men and animals. Those animals also which are the most useful are likewise the most abundant; and the productions of several climates are suited to the particular wants of men. Thus the hottest countries abound in cooling and grateful fruits; in countries liable to great drought there are plants and trees which are as springs of water, and relieve the intense thirst of men and animals. If in any place there is a deficiency of wood for fuel, there are coals and turf in abundance; and if there are countries destitute of rain and other sources of fertility, they are recompensed by beneficial inundations, such as those of the Nile in Egypt.

Amongst the human species we also find the proportion between the sexes pretty even; the number of males to that of females being as twenty-six to twenty-five. In civil society wealth and talents are so admirably distributed, that as every individual may be happy according to the particular circumstances in which he is placed, so nothing essential is wanting to the good of society in general. If the inclinations and propensities of men were not so varied; if their tastes and dispositions did not lead them to embrace different kinds of life, and to adopt different views; if there was not such a diversity of genius, and such a variety of talent; such a difference of opinion respecting beauty, riches, and every other exterior circumstance; human society would have no charms to interest, no pleasures to invite, but would present one constant assemblage of uniform sterility. No class of men can live isolated from the rest; and each country has its peculiar advantages, which, if common to all, would do away the necessity of the connection and commerce at present so essential to the interest and convenience of each. In short, wherever we cast our view, we see nothing but harmony and beautiful proportion. Notwithstanding the infinite variety of creatures, and the frequent interruption of some of the laws of nature, every thing in this immense universe is beautiful, and arranged with that regular proportion and admirable perfection which produce the greatest possible good to the creation.

Let us adore and exalt the great Author of nature, and, whilst we contemplate the glory and magnificence of his works, sing his praises with the gratitude of an overflowing heart! The greatest proofs, and the most pleasing employment, of reason, is to admire the wisdom of God; and though the most profound investigation can penetrate through a very small part of the glory which shrouds the works of Omniscience, and the most that we can know is little in comparison of what is concealed from our view, we yet discover sufficient to convince us that the perfection of God is infinite, and his power and goodness without bounds; and may he graciously condescend more and more to remove the film from our eyes, that we may acknowledge him in all his works, and feel in ourselves a degree of that divine peace and ineffable love with which he governs the universe and arranges the spheres!

P 4

APRIL XXII.

Of the constituent Parts of Water.

When we drink water, if we suppose that we are partaking of a pure and simple element, we are deceived; for naturalists affirm that each drop of water is a little world, in which the four elements and the three kingdoms of nature are united. There is scarcely any water that does not contain much heterogeneous matter, which is readily discovered when the water is either distilled or filtered: and however incredible this may appear, it is sufficiently proved by the most exact and accurate experiments.

Besides its elementary parts, water contains different earthly particles; such, for example, as belong to the mineral kingdom; as calcareous earths, nitre, and other salts. This will appear less remarkable if we consider how many earthly particles the water must meet with and dissolve in its course, or carry along with it. Water also contains an inflammable principle, which becomes manifest when in a state of corruption; and it contains a large portion of air, which is manifested during ebullition. It possesses heat, which keeps it in its fluid state; for when deprived of its caloric it is congealed, becomes heavy, and acquires the hardness of stone. Thus common water contains earth, salts, hydrogen or inflammable gas, heat, and air; which proves the truth of the assertion, that all the elements are united in a single drop of water.

But are plants and animals found in it? It certainly contains the principles of vegetation; since all plants derive from water their most nutritive juices, and are indebted to it for their growth and increase. As to the animal kingdom, there is abundant evidence of its existing in water; to say nothing of the fish and other aquatic animals with which it is peopled, there is not a single drop of water which has not inhabitants perceptible through the microscope; and we well know the facility with which insects are propagated in stagnant waters, the germ of which must have previously existed in the water, though certain circumstances might have prevented their development.

The consideration of all these particulars should lead us to reflect upon the wise providence of the Creator, who has not by chance formed the waters of so many parts. Were it purely simple, it might perhaps make the most pure beverage; but its medicinal virtues would be lost. From the great nutriment which it affords to plants, we may naturally suppose that it yields some of the nutritious properties it contains to men and animals; and though in itself it may not be very nutritious, it tends to the more perfect solution of our aliment, and to distribute it more readily through the minuter vessels. It is found to be the most wholesome beverage, and one which we cannot do without; the salutary effects of which are often felt when every other drink is prejudicial.

How grateful then ought we to be to God, whose goodness has so amply provided for our necessities! He has prepared for us that kind of food and drink which is fittest for our nature, and the most beneficial to our comfort and health; and he has imparted a salutary virtue to the most ordinary and indispensable means of subsistence. Let us therefore praise God for the water which he has given to allay our thirst, and digest our food; and though we should have nothing but bread and water for our sustenance, let us endeavour to be contented and grateful. Let us implore the blessing of God on what we eat, and ask grace to use it with a cheerful and contented mind.

APRIL XXIII.

Propagation of Plants.

VEGETABLES are in general propagated from seed, and in most plants the flowers produce the seeds which are to continue and preserve their fertility. Almost all flowers are folded within a bud, where they are secretly formed, being defended by their tunics and external leaves. When the sap begins to flow abundantly at the beginning of spring, the blossom swells, the bud expands, the tunics open and fall off, leaving the flower in naked beauty. We perceive on the outside some very small leaves of different colours, which serve to defend the organs of fructification, and probably to prepare the nutritious juice which enters those parts. It is however in the centre of the flower that we discover the organs of fructification. We find there a filament or stem, called pistil, which, particularly in tulips, rises pretty high; round the pistil are the stamina, capped with tops which contain a prolific dust, tinged of various hues. These stamina may be considered as the proper male organs destined to impregnate the germs, and the pistil the female part which receives the fertilising dust.

Vegetables are also propagated by grafts. From the tender branch of a tree, when in sap, they detach an eye, or beginning of a branch, with a part of the bark, and insert it between the bark and the wood of another tree, and bind up the whole very gently, by passing flax or some soft cord several times round it. From this there proceeds a branch of the same nature with the tree from which the eye was first taken, although the tree in which it is inserted be of a quite different sort.

Trees and other woody plants are propagated by slips: thus, for instance, a slip is taken from a willow, which, after being stripped of its small sprigs, is deposited in the ground; roots soon proceed from those places where branches had begun to appear, and in time it becomes a tree.

Another way of propagating vegetables is by means of roots; but these should have eyes, or they will not grow. Some plants shoot forth long filaments in all directions, which have knots or eyes; these extend their fibres in the ground, which become so many new feet that may be separated from each other, and then form new plants. A bulbous root is a species of eye in which the rudiments of the future plant are enclosed, and between its leaves are little bulbs or eyes, which enable the plant to be propagated by the leaves to which these bulbs are attached.

What a variety of causes are requisite for the production, preservation, and propagation of vegetables! Granting that the germs already existed, what art is required to effect their development, to give growth to the plant, to preserve it when arrived at maturity, and to perpetuate its species! How fruitful a mother must the earth be, in whose bosom so many tender plants are cherished and derive their nutriment! Water, which also contributes to their support, must be composed of all those particles, the assemblage of which favours the germination of plants. The sun must put all these in motion, and cause the seeds to germinate and the fruits to be matured, by the vivifying influence of his heat.

It was necessary to establish a proper balance and a just proportion between plants, that on the one hand they might not multiply too fast, and on the other that there might always be a sufficient abundance. It was requisite that the texture, vessels, fibres, and every part of the plant, should be so disposed that the sap might penetrate them, circulate, and be so prepared and digested, that the plant might receive its proper form, size, and strength. It was necessary to determine exactly what plants should spring up of themselves, and what others should require the care and cultivation of man. The work of the generation and propagation of plants is then so complicated and intricate, and passes through so many different processes, that it would be impossible to develope the great chain of causes and effects which produce such wonderful changes. However, we know sufficient to acknowledge the wisdom and beneficence of the Creator; for who else could have communicated to the elements the power of perpetuating vegetables? or have given to the sun that light and heat, the blessed effects of which upon the earth are so abundantly conspicuous? It is God alone who has created the constituent parts of plants, and who has dispersed them in the air, in the waters, and upon the earth; who has established the laws of motion, formed the atmosphere, and produced the sources of rain and clouds. It is God who giveth life to seeds, and existence and increase to vegetables; by his order the earth yearly renews her fruits, and each spring restores the youth of nature, and each summer perfects her beauty. Let us then for ever celebrate the power, the wisdom, and goodness of the great Creator of plants as well as of men! Let earth and heaven proclaim how great and glorious is his holy name, now and through all eternity.

APRIL XXIV.

Diversity of Traits in the Human Countenance.

It is an evident proof of the adorable wisdom of God, that though the bodies of men are so similar to each other in their essential parts, there is yet such a diversity in their exterior, that they can be readily distinguished without the liability of error. Amongst the many millions of men existing in the universe, there are no two that are perfectly similar to each other; each one has some peculiarity pourtrayed in his countenance, or remarkable in his speech; and this diversity of countenance is the more singular, because the parts which compose it are very few, and in each person they are disposed according to the same plan. If all things had been produced by blind chance, the countenances of men might have resembled one another as nearly as balls cast in the same mould, or drops of water out of the same bucket: but as that is not the case, we must admire the infinite wisdom of the Creator, which, in thus diversifying the traits of the human countenance, has manifestly had in view the happiness of men; for if they resembled each other perfectly, they could not be distinguished from one another, to the utter confusion and detriment of society. We should never be certain of life, nor of the peaceable possession of our property; thieves and robbers would run little risk of detection, for they could neither be distinguished by the traits of their countenance nor the sound of their voice. Adultery, and every crime that stains humanity, might be practised with impunity, since the guilty would rarely be discovered; and we should be continually exposed to the machinations of the villain and the malignity of the coward: we could not shelter ourselves from the confusions of mistake, nor from the treachery and fraud of the deceitful; all the efforts of justice would be useless, and commerce would be the prey of error and uncertainty: in short, the uniformity and perfect similarity of faces would deprive society of its most endearing charms, and destroy the pleasure and sweet gratification of individual friendship. The variety of features, then, constitutes part of the plan of divine government, and is a strong proof of God's tender care over us; for it is very evident that he has disposed the particular parts of the body with as much wisdom as he has manifested in its general structure, and we are compelled to admire his beautiful and wise arrangement in this as well as in every other part of the creation.

APRIL XXV.

The universal Care of God over his Creatures.

ALL the creatures which live in the air, in the waters, and upon the earth, enjoy the care of Providence: by which they are maintained in their particular states, and live, thrive, and propagate their species; each according to the faculties it has received, and in its own peculiar nature, fulfilling the end for which it had existence upon the earth. Animals destitute of reason are provided with organs, strength, and sagacity, adapted to their several destinations. Their instinct teaches them what is dangerous or hurtful, and enables them to seek, discern, and prepare the aliment and the habitation destined for them. All this is involuntary, it is not the result of choice and reflection; they are irresistibly impelled to it by propensities which a Superior Power has given them for the preservation and support of their lives. They find suitable food and convenient habitations, and no species of animals is destitute of what is necessary to its subsistence and well-being.

Man is of a superior nature, but he comes into the world in a state of greater feebleness, and has much more need of assistance than most other animals. His faculties, necessities, and desires, are greater and more numerous, as well as more urgent, and require more care and attention: hence we find he is more favoured with the regard, and more cherished by the blessings, of Divine Providence. The earth, the air, and the water, the clouds, and the reflected light of the luminous spheres revolving in space, contribute in an abundant and diversified manner to the preservation and happiness of man. God has distributed his blessings to all intelligent beings with an impartial love, and he has subjected to their dominion creatures destitute of reason, whose lives and strength are employed in their service.

What again particularly merits our attention is, that all the habitable parts of the earth afford a sufficient degree of nutriment to the creatures which live there. Thus, not only the fertile bosom of the earth, but the vast plains of air, and the depths of the sea, teem with alimentary matter suitable for the support of the innumerable multitudes that exist in these elements. The treasures of divine bounty are infinite; and the provisions that God has prepared for all his creatures answer every want, supply every necessity, and can never be exhausted. The world does not decay, and the sun daily shines with his wonted light and accustomed heat. The fertility of the earth does not diminish; the seasons regularly succeed each other; and the fields never fail to offer their annual tribute of fruit for the support of the animal world.

Whether we consider the constancy, the riches, or the diversity of the means of subsistence which nature affords in all situations, we always perceive the traces of an all-bountiful Providence. All things which surround us, and which serve to support us and procure the comforts and pleasures of life, are so many visible means, so many open channels, by which our Preserver and glorious Benefactor distributes his favours and diffuses his blessings. The agents of nature are the ministers which fulfil the designs of

Providence; the world is as his magazine, from which we draw all that we need; and it is only to his parental care and that ineffable goodness, the essence of divine nature, that we owe all these benefits.

Father of the creation! in whom we have life, motion, and being, how extensive and inexpressible is thy compassion, and how mercifully thou rulest things by the word of thy wisdom! At thy command the dews of heaven descend to refresh the thorn as well as the cedar, and the lot of mortals is in thy hands, and in thee their felicity: thou art their supreme good, and thy fatherly cares are extended over all the children of humanity! Thy merciful goodness causeth the sun to shine alike on all thy creation; and at thy command the gentle breezes waft the perfuming balm of the rose, and the air smells sweet with ever-freshening odours; the most delicate fruits rejoice our taste, and the soft showers fall to revive drooping nature! Thy gifts are proportioned to the necessities of thy creatures, and thou causest the righteous to partake of the sweet and saving influence of thy grace! Thou givest to the bee the nectar of the flowers, to the worm the drop that quenches his thirst, and to the world the rays of the sun!

APRIL XXVI.

Flowers which bloom in April.

The nearer that charming month approaches, when we shall see the country, gardens, and meadows, arrayed in all their beauty, the more does the dreary aspect we have so long witnessed clear up, and nature more evidently throws off her wild appearance. Every day discloses some new beauty, and every hour hastens the perfection of nature. The fresh grass already sprung up is browsed by the flocks with avidity; the young corn begins to appear, and the gardens to smile. Here and there the budding flowers invite our attention; and the sweetly-modest violet is one of the earliest that scents the air of spring. The flowrets of the beauteous hyacinth, gradually rising above the leaves, at once please the eye and gratify the smell, by the richness of their tints and the fragrance of their perfume.

The imperial crown throws out a number of stellated leaves, its stem rises high, and its red and yellow bell-shaped flowers inclining towards the earth, form a sort of crown surmounted by a tuft of leaves. From the midst of its leaves the auricula raises its stem, supporting a bunch of flowers, the circular edge of which exceeds the richness of velvet and the softness of satin. The tulip opens out more slowly, scarcely yet daring to unfold its beauty, lest the night air or chilling blasts should suddenly nip its opening charms and destroy its infant splendour. The ranunculus, the pink, and the rose, hide their beauties till milder weather permits them to bloom in safety.

An attentive observer will find in these delightful objects great cause to admire the wisdom and goodness of God; it is with the wisest views that, at the return of spring, each plant begins precisely in the time and in the order prescribed to it to develope its leaves, put forth its buds, and prepare for the production of fruit.

In the vegetable kingdom one species succeeds to another from the commencement to the termination of the year; scarcely are some visible when others are ready to appear, and these are followed by others, which spring up each in its turn and allotted time. Whilst one plant brings its fruit to maturity, nature excites another to propagate, that its fruits may be ready when the other has accomplished its end. Thus we constantly receive a succession of flowers and fruits, there is never any want, and from one end of the year to the other Nature watches over and preserves her productions.

The flowers of spring, which we contemplate with so much delight, should induce us to reflect upon youth, the flower and spring of life. Like them, youth grow up amiable and beautiful, with a thousand charms and opening virtues that cause them to be admired and loved; but as the north wind sometimes sweeps over the fairest flowers of spring, blasting in its course the rich hyacinth and the lovely violet, so the pride of beauty and the glory of youth are often nipped in the bud, and fade ere their opening charms are perfected. Beset with dangers and surrounded by misfortune, the horizon of youth often lowers, and obscurity renders dreary their morn of life; or if brighter prospects gladden their path, they are suddenly wrapped in night and involved in gloom. Let no one then, in the vanity of his heart, boast because he abounds in the pleasures of youth, or exult in his superior endowments: for "the days of man are as grass; as a flower of the field he flourisheth; the wind passeth over him, and it is gone, and the place thereof shall know it no more."*

APRIL XXVII.

Return of the Birds.

NUMEROUS species of birds at the beginning of winter emigrate to other countries; some in search of a milder climate, and others to find secure retreats and warm shelter in caves, holes, and retired places.

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* Psalm ciii. 16.

These birds return to us when the gentle mildness of the spring advances; it soon awakens the swallows, and a secret instinct brings back the others which had traversed the seas to far-distant countries, in search of that subsistence and temperature which their nature required.

Their return is generally in such an order, that those which went away the latest are the first which come back. The air will soon become re-peopled with its feathered songsters; the nightingale will again rejoice the groves with his melody, the twittering swallow resume her former nest, and the stork again inhabit the retreat she left at the beginning of winter. In a few weeks the skies will once more be gladdened with the joyful songs of the returning choristers, and the valleys will resound with their swelling notes.

Two circumstances in the emigration of birds particularly claim our attention; they know exactly the time when to return, and the direction they are to take. "The stork in the heavens knoweth her appointed time; and the turtle, and the crane, and the swallow, observe the time of their coming."* No doubt the temperature of the air, and the natural propensity of creatures to produce and rear up their young, are powerful motives to influence them to a change of abode. But besides these, there is a very singular, and in some respects inexplicable, instinct, which prompts them to it. How astonishing, that these timid animals, deprived of reason, should know exactly the direction they are to take, and how far to go! Without compass to steer and guide to direct, without provisions, they undertake and finish, in the most regular order, a voyage which is sometimes many hundred miles in extent!

Who marks out to them their tract through the devious air? Who informs them of the length of way they have passed, and of that they have yet to accomplish? And who is it that guides their flight and supplies them with every necessary during the voyage? Whichever way we consider these facts, we must discover and acknowledge the manifestation of a power superior to mere animal instinct; we must confess the influence of God, and own the effects of his almighty power. It is to him the birds are indebted for that instinct which they blindly obey; he pointeth out to them the country, and the very trees and shelter, where they may dwell in security; he conducted their distant migrations, and listeneth to their cries when they call for nourishment: and he who hearkeneth unto the feeble birds will never forsake his children, nor suffer the deserving to perish.

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* Jer. viii. 7.

APRIL XXVIII.

The Utility of Forests.

During the winter, which is just past, many people have experienced the great advantage of forests; which have furnished us with fuel at a time when the intensity of the cold was severely felt. But this is far from being their only, or even their principal, use; else why do those immense forests exist, to form an uninterrupted chain through whole provinces and kingdoms.

May not one end of their creation be the pleasure we derive from their appearance; they form one of the greatest beauties of nature, and it is always regarded as an imperfection in a country to be destitute of woods and thickets. Our impatience when the leaves in spring are backward in appearing, and the delight we experience when at length they do open out, proves how much they adorn and embellish nature. Whilst reflecting upon the utility of woods, we should not forget the fruits which the numerous species of trees produce; for though there are some trees whose fruits do not appear to be of any use to man, the trees which bear them are always useful, whether for their beauty only, or the advantage of their foliage and wood.

And if we properly reflect, we shall acknowledge that those trees which are called barren are nevertheless of great use; they nourish and support a variety of insects, which serve as food for those birds which afford us sustenance and the most exquisite dainties. The acorns of the several species of oaks, chesnuts, and various other productions of trees, are the favourite aliment of swine and wild boars: and have we not sometimes known these fruits become the food of man? And they are further useful in being the seed which perpetuates the forests. How many animals find a shelter and an existence in the woods, which without them must perish! and of how many conveniences, utensils, and medicines, should we not be deprived, if we had no wood, bark, or roots! and how dull and sterile would the earth appear, if no trees waved their verdant heads above its surface, and if no groves diversified its plains! Forests then being of the most essential use to mankind, Nature herself has the care of perpetuating them. If their preservation and increase had been abandoned to the casual vigilance and industry of men, they would long since have perished. But the Creator himself has preserved the trees of the forest; he alone has planted and supported them. He disperses the small seeds over the country, and gives them wings, that they may be more easily wafted by the winds to the distant places destined to receive them. He alone has caused those large trunks to rise up majestically in the air, and meet the clouds with their spreading foliage; it is he who has established them firmly in the earth, where their branching roots enable them to defy the winds and brave the storm; and he waters them with his dew, and refreshes them with his rain; their beautiful verdure yearly returns, and they seem to preserve a perpetual life.

Merciful Father! thy goodness extends over all the earth; every-where the traces of thy beneficence and the effects of thy wisdom appear; in the fields and in the groves, in the wild desert and in the flowery mead, thou hast erected monuments of thy goodness, and placed memorials of thy bounty; and the season is now approaching when I can sit beneath the shade of the spreading oaks, and, whilst my heart swells with love and gratitude, pour forth the feelings of my soul in songs of joy and hymns of adoration in praise of thee, and in celebration of thy holy name.

APRIL XXIX.

Pleasures derived from the Contemplation of Nature.

NATURE, with maternal kindness, offers to all her children the most delightful and universal, as well as the least expensive, of all pleasures. Such our first parents enjoyed in Paradise, and it is only depravity which leads men to delight in other recreations. Mankind are accustomed to despise the blessings which they daily enjoy, and seek for amusements that afford them pleasure from their variety, and a succession of delight from their novelty: while the pleasures of nature exceed all others, are open to every one, and their enjoyment never leaves behind it the sting of remorse, or the tears of repentance. But we are so selfish as to disregard the charms of nature, because they are alike open to the eyes of the poor as to those of the rich; and so foolish as to despise them, because of their cheapness: whereas nothing should gratify us more than to know, the same objects which caused our delight constitute the happiness of millions. Compared with the noble and affecting pleasure such a consideration excites, how frivolous and deceitful are all those costly amusements and magnificent entertainments, which delight the rich and please the foolish! their enjoyment often ends with disgust, and leaves as its portion a painful vacancy of soul; whilst nature, ever rich and bountiful, continually varies her charms, and offers new beauties to the admiring observer.

All the pleasures which are the effects of art are of short duration, and fleeting as the dream, the illusions of which vanish when we awake. But the exercise of reason, and the ever-varying pleasures of the imagination, last for ever, and derive new strength from contemplating the works of nature, which calls forth all the finer feelings of the heart. To see the starry heavens, the earth variegated with flowers, a thousand different landscapes, and prospects vying with each other in beauty; and to listen to the evening song of the nightingale wafted on the breeze, whilst all nature is retiring to repose; will ever fill our souls with delight, and gratify all our feelings. If any one is insensible to these beauties, and unaffected by their charms, it must be owing to his depravity, or the stupidity which he has acquired from inattention. The great science of Christianity consists in the innocent enjoyment of every good which surrounds us; and he who practises this, possesses the art of deriving the means of happiness from every circumstance that does not injure his virtue, his intellect, or his feelings. Beneficent Creator! thou art mindful of us in this beautiful season, and providest us with abundant sources of pleasure! Thou continually causest new springs of delight to open, and our hearts are filled with joy and gladness! If we desire to elevate our hearts to thee, to indulge in holy meditation, and to enjoy celestial bliss, nature offers us the most ample means. May we ever prefer this exalted satisfaction before all the pleasures of sense! In these sweet days of spring, may the enjoyment of nature's purer pleasures be more grateful to us than the allurements of sensual gratifications, which neither dignify the mind nor purify the heart! Teach us, O Lord, to acknowledge thy divine power and goodness; for it is by seeking to know thee in the varied and numerous works of thy creation, that we open to ourselves a pure and inexhaustible source of delight, and are enabled to enjoy, in this state of existence, a foretaste of the felicity which the righteous shall experience in thy presence for ever and ever!

APRIL XXX.

The Glory of God seen in the Creation of Animals.

ANIMALS, instead of being abused, should be treated with all possible kindness; and, to enable us to do this better, we should consider them as subjects in which we may glorify God. All creatures may serve this purpose, but none so well as the animal creation. Every plant, tree, flower, and stone, bears the impression of the grandeur and glory of the Creator; but in the animal kingdom it is still more manifest. Examine the structure of any single living creature, and what art, beauty, and wonderful mechanism, do we discover! and how these are multiplied, when we consider the prodigious number and immense variety of animals, forming one interrupted chain from the elephant to the little mite seen through a microscope! What links, order, and relations, exist amongst all creatures! All is harmony; and if upon a superficial view we suppose we have discovered any imperfection, we shall soon find it was our ignorance led us to such an erroneous conclusion.

It is not necessary that each individual should make deep researches into the nature of animals, or that every one should become a profound naturalist; it is merely sufficient to pay attention to what is well known and most common, to what may come under the observation of all. We see, for instance, a variety of animals formed in an admirable manner, which live, feel, and move, as we do; which, like us, are subject to hunger, thirst, and cold; and which consequently stand in daily need of having their necessities supplied. To all these creatures God has given life; he preserves them, and provides for their wants; he watches over them, as the father of a family over his household. From this we may conclude, that God has the goodness and tenderness of a father; and if his cares thus extend to animals, what will he not do for man? If it be his chief desire to render the lives of creatures devoid of reason comfortable and happy, what may we not expect from his beneficence? Let the imbecile and distrustful man blush for his doubts and anxieties, who, when abundance is no longer his portion, despondingly anticipates the dread of poverty, and fears that his Creator will suffer him to perish from want. We may rest assured that he who supplies the necessities of every animal will administer to us the necessaries of life.

The instinct of animals gives us fresh cause to admire the Supreme Being, who has so wisely combined the means with the end. As the instinct of animals tends particularly to their preservation, it is most observable in the love and tender solicitude they feel for their young; and as the strongest instance of parental care, our Saviour makes use of the image of a hen gathering her young under her wings. It is certainly a very pleasing sight to see the strong affection which a hen bears to her young ones, and the continual care she takes of them; she never ceases to watch over them, flies to their assistance at the least appearance of danger, boldly opposes every aggressor, and hazards her own life to save her young. She calls them, and reanimates them with her maternal voice; extends her wings to receive and cover them; and neglects every convenience for herself, whilst she thinks of nothing but the safety and well-being of the objects of her affection. Every one must acknowledge in this the effects of infinite wisdom; for without this maternal solicitude, this instinct, so powerful and so superior to every thing, the chickens must perish, and the species soon become extinct. It cannot be said that the hen acts thus for her young with any understanding or reflection; or that she judges, reasons, foresees, combines, and draws inferences. She does it from the operation of that instinct which she has received from the liberal hand of nature, without study and without application. It is then the duty of man to seek in animals an occasion to glorify God; and as our attention increases and our observations become more extensive, our knowledge will be improved, and the pleasure we receive from these investigations will be more frequent and exquisite.

MAY I.

Hymn on the Beauties of Spring.

Blessed children of God! open your hearts to joy! See the Spring walking forth in beauty and gaiety, Contemplate the verdure of the fields and the flowers of the meadows, whose fruits will soon bring us the sweets of abundance. Yonder tree, which not long since appeared devoid of life and vigour, is now decked with blossoms that promise an abundant harvest.

How beautiful is nature! How graceful her ornaments! Every animal, mead, wood, and field, revives, and, together with man, rejoices in a new existence. The lark soars aloft, till her sweet carols faintly die away on the breeze; the pigeons, in many a giddy whirl, fly round the flowery plain; and the plaintive melody of the nightingale pours from the groves, and amongst the flowers, the soft notes that are heard in the vales, or, louder swelling, fill the hills and woods. Here the fruitful hen guides, protects, and shelters with her wing, the feeble unfledged little ones, which nature has entrusted to her care. The swallow, leaving her nest, immediately returns to the calls of tenderness, and brings her young the desired nourishment. The corn springs up in luxuriance, and promises abundantly to reward the toils of the labourer, who joyfully anticipates his future blessings. Men plant, but the vivifying rays and fertilising showers descend from heaven. The heat of the sun ripens the fruits of the earth, and causes the life-invigorating juice to flow from the vine. The most humble and abject of the sons of men, when animated with celestial radiance, and favoured to drink of the living waters from on high, becomes the honour of humanity, and the messenger of the power and glory of God.

System of the World.

Of all the parts which form the mundane system, the sun is the most striking and interesting. His form is spherical, and from him continually emanates an inexhaustible stream of luminous particles. By the telescope we discover in him certain spots, by which we can ascertain that he turns round his axis. His distance from the earth is eighty-two millions of miles, and he is one million of times larger. He communicates his light to at least twenty opaque globes that revolve round him at different distances. The nearest to him is the planet Mercury, which is seldom seen, and little known. Next is Venus, called both a morning and an evening star; because she sometimes precedes the sun, and sometimes follows after him. After Venus comes our own planet, the external surface of which is composed of earth and water, of mountains and valleys, and its internal part of beds and strata of different substances. This earth is the abode of a multitude of creatures, animate and inanimate; plants, metals, and animals. The moon revolves round the earth, and accompanies it in its revolution round the sun. She is fifty times less than the earth, and on her surface we discover several brilliant spots, as well as some which are opaque. If the surface of the moon was entirely level, the rays of light would be equally reflected from every part, and we could not then observe these spots, of which the brighter were formerly supposed to be continents, whilst those of a darker and more opaque appearance were considered as seas, appearing dark from their absorbing the rays of light: but later observations have proved, that they are only vast cavities which do not reflect the sun's light so strongly; that the luminous parts are plain superfices, and those that are most brilliant are lofty mountains.

The remaining planets in our system are, Mars; Jupiter, and his four moons; Saturn, and his seven; and Herschel or Georgium Sidus, and his six moons. Saturn is at such an immense distance from the sun that he is nearly thirty years in performing his revolution. The vast dominion of the sun, above a thousand millions of miles, is but a part of the universe; for each of the fixed stars is a sun, equal in magnitude and brilliancy to that which enlightens our sphere. Such is the grandeur of God, and such his glory, displayed in these admirable works; which invite us to pay our tribute of admiration, reverence, and praise, to the B ing which formed them! Is there any thing in nature more proper to inspire in us exalted ideas of the Deity than the aspect of the heavens, nightly irradiated with thousands of revolving spheres? May we never view them without feeling the most lively sense of the munificence and grandeur of him who has created all things, and continues to preserve them with wisdom and rule them with merciful goodness.

MAY II.

Blossoms of Trees.

OUR gardens and fields are now decorated with the beauties of spring, and every part of Europe presents the most delightful aspect. The eternal word of the Creator, pronounced when he formed the world, has produced all these effects; his all-creating hand has again renovated the earth, and in a measure created it anew for the pleasure and happiness of his creatures. It is God alone who calls for the spring, and orders it to appear. Approach, O man, and try what thy wisdom and thy power can execute! Canst thou make one tree to blossom, or one leaf to germinate? Canst thou call from the earth the smallest blade of grass, or order the tulip to rise in all its splendour? Contemplate these flowers; examine them with attention.

Can they be more perfect, can their colours be more beautifully blended, or their forms more elegantly proportioned? Can the pencil of the painter equal the warmth of the blooming peach, or imitate the richness of a cherry-tree in bloom? So far from imitating, no one can conceive all the beauties of renovated nature; and if there were no other proofs of the power and wisdom of God on the earth, the flowers of spring would sufficiently display them. Every tree that blossoms, every plant, every flower, manifests a portion of that wisdom and beneficence so abundantly diffused through the earth. There is an infinite diversity among the blossoms of trees; though all beautiful, they differ in degree, one surpassing another; but there are none which do not possess some beauty peculiar to themselves. Some have flowers of a pure white; others have streaks of red and shades, and add to beauty and elegance the most exquisite fragrance. But all these multiplied varieties do not affect their fecundity.

From the consideration of these circumstances, we may receive profit and instruction. We may reflect, that, though we are not favoured with the same advantages that some possess, we should neither be discouraged nor afflicted. The privation of some accidental benefits can in no degree injure our well-being. Though we may not be quite so rich, so powerful, or so handsome, as some are, these are trifling things in the estimation of the virtuous and the wise; for without them we can be equally happy, equally useful to our fellow-creatures, and equally pleasing to God. True beauty consists in the works of piety, and the fruits of virtue. The blossoms of a fruit-bearing tree please more than the splendour of the tulip, or the richness of the auricula; because from the one we expect, when the blossoms are over, to receive fruit; while the others please for a moment, and are seen no more. Let us not then prefer the mere lustre and charms of external beauty: the rosy tints of health, the elegance of form, and the freshness of youth, are fleeting, and soon fade; they alone cannot secure present peace, nor durable happiness. Those blossoms only which promise fruit worthy of God, and useful to mankind, deserve our regard, and merit our approbation. As the beauties of the blossoming trees hastily perish, so will the youth, now in the spring of life, fluttering in the gaiety of their charms. Let us then whilst in the morn of life, and in the vigour of health, prepare, by study and application, to produce in the evening of our days, when divested of all external charms, abundant fruits of piety, of virtue, and of knowledge.

MAY III.

Of the continual Revolutions and Changes that take place in Nature.

Motion and change seem necessary to the preservation of the corporeal world. If we pay the least attention to what passes on the globe which we inhabit, we shall be convinced that the smallest particle of matter in the universe cannot be considered as in a state of absolute and continued rest.

The earth turns round its axis once in twenty-four hours, and by this motion all the points of its surface change their situation with more or less rapidity. Under the line or equator, where this motion is performed with greater celerity, each body is carried more than one thousand miles every hour, besides the annual revolution of the earth round the sun, which is at the astonishing rate of fifty-eight thousand miles every hour. This motion is not perceptible, but the relative motion of earthly bodies is more observable.

Small streams uniting form greater, till at length torrents and rivers are formed, which again are lost in the sea. Water is also raised in exhalations, and forms clouds, which produce rain, snow, and fogs: from these, streams are formed, which once more enter the sea; and tides, storms, and torrents, keep the water in perpetual motion. The atmosphere is not less in a state of rest. Between the tropics an east wind continually blows; and in other places, where no agitation is perceptible, the thermometer and barometer prove that the air is never perfectly calm; and the frequency of meteors sufficiently evinces the continuance of its motion.

The surface of the earth is also subject to frequent revolutions: the hardest rocks cleave, and stones gradually wear away, or break into small particles; some lands sink down, others are inundated, and some are removed by earthquakes. Hills are swept away, and valleys are filled up; marshes are drained and become covered with trees; the depths of the sea are made to wave with corn; and that which was land is now water. Light succeeds to darkness, cold to heat, and wet to drought; and bodies are continually experiencing alterations, many of which are imperceptible. To these we may add the changes to which animal life is subject; and we shall then be able to form some idea of the continual revolutions of nature. Man himself is continually losing a portion of his substance by the process of perspiration, and in a few years is clothed with an entirely new body. Thus every thing upon the earth is in motion, every thing alternately grows and perishes; and to be born and to die, is the lot of all created beings. These continual revolutions are salutary warnings, and teach us that this present world is not the abode for which we are destined. When I consider the perpetual changes and constant vicissitudes incident to all terrestrial objects, I feel the vanity and insignificance of earthly things; and from the frailty and shortness of this life anticipate a better and more perfect state in a future world. Every thing cries aloud that we are only as travellers upon the earth, who have a certain time to sojourn, and then accomplish the end and receive the reward of our pilgrimage. And in the midst of these changes and revolutions, the pure and devout soul receives consolation and support from the contemplation of an almighty and eternal Being, who, though the mountains shake, and the hills leave their places, the seas be agitated and tossed by the fierce storm, and all earthly bodies return to original dust, still exists the same, regarding his children with compassionating love, and assisting the helpless in the hour of necessity, and in the day of tribulation.

MAY IV.

An Invitation to seek God in the Works of Nature.

Awaken, O my soul, from the slumbers which have so long benumbed thy faculties, and attentively regard the surrounding objects. Reflect upon thine own nature, and upon that of other creatures: consider thine origin, structure, form, and utility, with every additional circumstance that can fill thee with love and adoration of the all-wise Creator. When thou seest the variegated and brilliant colours of the heavens, the lustre of the numerous stars that irradiate them, and the night reflected from a thousand beauteous objects, ask thyself whence all these proceed? Who has formed the immense vault of heaven? Who has placed in the firmament those exhaustless fires, those constellations whose rays shoot through such an imconceivable space? And who directs their course with the beauty of order, and the harmony of regularity, and commands the sun to enlighten and make fruitful the earth? Thou wilt answer, the everlasting God, at whose word the creation arose fair and beautiful, whose wisdom still directs it, and whose mercy still operates for the felicity of all mankind. His hand has established the foundations of the mountains, and raised their summits above the clouds; He has clothed them with trees and beautified them with flowers and verdure; and He has drawn from their bosoms the rivers and streams which irrigate the earth. To the flowers of the field He has given their beauty, and fragrance, far exceeding all the combinations of art and efforts of skill. All the creatures that are seen in the air, in the waters, and on the earth, owe to him their existence, and the possession of that instinct which is their preservation; and man, in himself a world of wonders, looks up to God as his Creator and Protector.

Let our chief care and most pleasing duty be henceforth to seek for the knowledge of God in the contemplation of his works. There is nothing in the heavens or upon the earth which does not impress upon our minds the wonderful wisdom and admirable beneficence of the Creator, to whom, in the midst of the revolutions of nature, let us raise our thoughts, and pour forth the joyful accents of our love and gratitude.

MAY V.

Morning.

When Aurora first peeps, and dissipates the shades of night, we seem to enjoy a new creation. The faint streaks that mark the eastern horizon soon become more vivid, and the morning breaks with beauty; we begin to distinguish the verdure of the hills, the opening flowers, and the pure streams that water the meads. The horizon becomes more luminous, the clouds assume the most beautiful tints, and the charms of the distant valleys open upon us; the breath of the hawthorn is sweet, the dew drops upon the flowers shew the pure lustre of pearls, and nature rejoices in her existence. The first sun-beam darts from behind the mountains that skirt the horizon, and plays upon the earth; more succeed, and the brilliancy increases, till the disk of the luminary encircled in glory, is visible, and the sun shines in full refulgence; he gains the mid-heaven and no eye can sustain his glory.

When I stand upon the summit of some lofty cliff, and see the star of day slowly rise out of the ocean that foams beneath, I feel a mingled sensation of sublimity, awe, and adoration; I think of the infinite God, the Creator of the sun, and in the beauties of the rising day acknowledge his power and wisdom. With the lark that carolling in the air meets the morning, and by the sweetness of his strains proclaims the arrival of day, I soar in thought into the regions of glory, and hail the great source of light. The joy and gaiety of all nature, and the raptures of the creation, raise in my breast the strongest emotions of gratitude, whilst my heart swells with delight, and every sense is extacy. Yet there are many thousands of human beings who have never known the pleasure of such sensations, nor even experienced the gratification of viewing the morning sun; who prefer the drowsy influence of their bed, and the confined limits of their gloomy chamber, to the freshness of morning and the brilliancy of day.

MAY VI.

Vision.

To enable us to perceive external objects, it is requisite that rays of light be reflected from them. These rays are transmitted to the eye, passing through the transparent cornea, by whose convexity they are united into a focus, through the aqueous humour and pupil of the eye, into the chrystalline lens, which condenses them more; and after this concentration, they penetrate the vitreous humour, and impress on the retina the images of external objects; and the optic nerves, of which the retina is an expansion, convey these impressions to the mind, which forms perceptions and ideas according to the different sensations excited by the object presented.

The faculty of vision is one of the most wonderful properties of human nature, and particularly merits our attention. Though the image of external objects is painted upon the retina in an inverted position, we yet see them in their proper situation. And what is still more admirable with such a small organ as the eye, we perceive the largest objects, and take in the whole of their dimensions. From the height of a tower we see at a distance the numerous buildings of a large city painted upon our retina with the utmost exactness and precision, notwithstanding the extreme minuteness of the organ which receives so many millions of rays without confusion. From the top-mast we see the ocean covered with a vast fleet, and waves innumerable undulating around us; from each of which, rays of light must penetrate the eye, whose volume is so minute. Or, having gained the summit of some lofty mountain, if we direct our view over the distant plains, every object that we notice reflects a number of rays upon our organs of vision, or we could not distinguish the purling brooks, nor the flowery meads. Rays of light not only pass from these objects to our eyes, they are transmitted to every part of the surrounding atmosphere; hence, wherever we pass within a certain distance, the same objects are still visible, the rays constantly proceeding from them, whether they meet the focus of our eye or not.

So far we are able to explain the wonders of vision, but beyond this all is darkness; it has pleased the Almighty Creator to conceal from our limited understanding the immediate connection between matter and mind! we know the image of external objects is reflected on the retina, and that the mind takes cognisance of it, and here we must rest satisfied; for to explain the manner in which we see these objects is impossible.

MAY VII.

Spring renews the Face of the Earth.

How great a change has taken place throughout nature! The earth, which has reposed during the winter, resumes its fertility, and all the creation rejoices! A few weeks since, every thing was desolate, and wore the aspect of sterility; the valleys now so beautiful were buried in snow, and the mountains, whose blue summits pierce the clouds, were shrouded in thick mist. In those verdant avenues where now dwells the nightingale, were only seen withered branches and leafless trunks. The rivers and streams which now flow murmuring along their channels, were arrested in their course, and rendered motionless by ice. The little choristers, whose loud notes swell upon the breeze, were torpid in their retreats, or had retired to other climes. A mournful silence resigned in the fields, the groves were still, and as far as the eye could reach, solitude met the aching view. But when the first zephyrs of spring played upon the earth, nature felt their refreshing influence, and arose from her stupor; joy and gaiety were awakened, and laughing pleasure banished every care.

The sun-beams penetrate, the sweet flowers spring up, the trees again look young, the budding beauties and the freshness of the verdure gladden the heart, and its joy is perfected in feeling the happiness of all around. Who can behold such a picture without emotion, or see it without thinking of the ineffable Being that produced it? The Lord breathes upon the earth, and the valleys smile; he watereth them with his dew, and they are fertile. His presence ripeneth the harvests, and fills our hearts with joy. His blessing is upon the furrows, and the parching earth drinks of the refreshing rain which softens it, and the seeds spring forth. The year is crowned with blessings, and the breath of God maketh the ground fruitful; under his steps flowers and fruits spring up, and all fruitfulness and abundance belong unto him. The pastures are watered with soft showers, and the hills are adorned with a beautiful verdure. The fields are covered with flocks, and the young corn rejoices the valleys. All nature rises in one general song of praise and thanksgiving to her bountiful Parent.

In the revolution effected by the mild influence of the spring, I seem to see the representation of that salutary change which the soul feels when it yields to the operations of the divine spirit of God. Before this it had no real beauty; its faculties perverted and depraved, were incapable of producing the precious fruits of piety, till the saving grace of God was felt in the heart, when it resembled the earth cheered by the vernal sun. Ignorance disappeared, the passions were controlled, and vice shrunk back ashamed: the heart glowed with virtue, and the mind was impressed with humility, and a firm reliance upon the blessed doctrines of truth.

MAY VIII.

Germination of Seeds.

MANY changes in the vegetable kingdom are now taking place under our immediate notice, whilst others are operating in secret, concealed from our observation. The grain which had been previously deposited in the earth swells, and the plant at length sprouts and gradually shoots up. As this is the beginning of all the beauties which spring and summer offer us in the vegetable kingdom, it merits some attention. Seeds are composed of different parts, according to the variety of species, the principal of which parts is the germ. Each germ has two parts; the one simple, which becomes the root, and the other laminated, which becomes the stem of the plant. The substance of most seeds is composed of two pieces called lobes, which contain a farinaceous matter, and serve as seminal leaves to the plants. Mosses have the most simple seed, consisting only of the germ, without pellicle and without lobes. To make seeds germinate, air and a certain degree of heat and moisture are necessary. The augmented heat, and the difference observable in the taste and smell, seem to denote a degree of fermentation; and farinaceous substance becomes fitted to nourish the tender germ. It has been ascertained by experiments made with coloured fluids, that this substance imbibes a moisture, which, in conjunction with the air and heat, forms a proper nourishment till the plant has required strength enough to make use of the juices furnished by the root. The lobes, exhausted of their farinaceous matter, gradually dry, and fall off of themselves in a few weeks, when the plant has no further need of their assistance.

Certain herbs which grow on the mountains are of a particular nature; their duration being very short, it often happens that the seed has not time to ripen; and that the species may not be lost, the bud which contains the germ is formed upon the top of the plant, puts forth leaves, falls, and takes root. When the delicate plant shoots up from the earth, it would run too great a risk if it were immediately exposed to the air and influence of the sun. Its parts therefore remain folded close to each other, nearly the same as when in the seed. But as the root grows strong and branches out, it furnishes the superior vessels with an abundance of juice, by means of which all the organs are developed. At first the plant is nearly gelatinous; but it soon acquires more firmness, and continually increases in size This short account of the germination of seeds suffices to shew us how many preparations and means nature uses to produce a single plant. When therefore we see a seed that we have placed in the earth sprout, we shall no longer consider it as beneath our notice, but shall rather be disposed to regard it as one of those wonders of nature which have excited the observation and attention of some of the greatest of men.

MAY IX.

Of the Chick in the Egg

WE are under considerable obligation to those naturalists who have made laborious researches and investigations into the nature of generation, and the propagation of animals, by which much light has been thrown upon a very difficult subject. Nothing contributes more to the glory of God than observations which point out the wisdom manifested in the production of the animal creation. The less we are able to comprehend the works of nature, the more eagerly should we seize every opportunity that offers of enquiring into them.

The hen has scarcely sat upon the eggs twelve hours, when some lineaments of the head and body of the chick may be discerned in the embryo; at the end of the second day the heart begins to beat, though no blood can be seen. In forty-eight hours we may distinguish two vesicles with blood, the pulsation of which is evident; one of them is the left ventricle, the other the root of the great artery; soon after one of the auricles of the heart is perceptible; in which pulsation may be remarked as well as in the ventricle. About the seventieth hour the wings may be distinguished, and on the head two globules for the brain, one for the beak, and two others for the front and hind part of the head. Towards the end of the fourth day, the two auricles, now distinctly visible, approach nearer the heart than they did before. About the fifth day the liver may be perceived; at the end of one hundred and thirty hours, the lungs and stomach become visible; and in a few hours more the intestines, veins, and upper jaw. On the seventh day the brain begins to assume a more consistent form. One hundred and ninety hours after incubation, the beak opens, and flesh appears on the breast. In two hundred and ten, the ribs are formed, and the gall-bladder is visible. The bile, in a few hours more, is seen of a green colour; and if the chick be separated from its coverings, it may be seen to move. Towards the two hundred and fortieth hour, the feathers begin to shoot, and about the same time the skull becomes cartilaginous;

in twenty-four hours more the eyes appear; at the two hundred and eighty-eighth, the ribs are perfected; and at the three hundred and thirty-first, the spleen approaches the stomach, and the lungs the breast. On the eighteenth day of incubation, the first faint piping of the chick is heard. It then continually increases in size and in strength till it emerges from its prison.

By so many different gradations does the adorable wisdom of God conduct these creatures into life; all their progressive evolutions are arranged with order, and each one is effected by its own particular cause. If the liver is always formed on the fifth day, it is from the preceding state of the chick. No part of its body could appear sooner or later without some injury to the embryo, and each of its members appears at the most convenient time.

The wise and invariable order in the production of this little body, is evidently the work of supernal power; and we shall be more convinced of it if we consider the manner in which the chick is formed from the parts which compose the egg. How admirable is that principle of life the source of a new being contained in the egg, all the parts of the animal being invisible till they become developed by warmth! What a wonderful order and regularity is observed in the formation of the chick; the same evolutions taking place at once in twenty eggs! Neither does changing the position of the egg at all injure the embryo or retard the formation of the chick; which, at the time when it breaks the shell, is found to be heavier than the whole egg was at first. These, however admirable, are far from being all the wonders displayed in the formation of a chick. The microscope, and the penetrating investigations of the curious, have only discovered what comes more immediately under the observation of our senses: whilst the discovery of many things remains for those who are to follow us, or they may never be known in this state of our existence. Much remains to be known concerning the mystery of generation, which at present is impenetrable to our researches; but let not this discourage us, let us endeavour to improve and make a good use of the little knowledge we are permitted to acquire, and we shall have yet sufficient to feel the wise power of God, and to employ it for the benefit of our fellow-creatures.

MAY X.

Buds of Flowers.

A NUMBER of flowers in bud, and still enveloped in their covers, may be seen in every direction; all their charms are veiled, and their beauties concealed within themselves. Like these, devoid of beauty, may be considered the wretched miser, isolated and centering every thing in himself; his views are base and sordid; he refers all to himself, and makes his private advantages and personal gratification the centre of his desires, and the confined circle of his actions.

The vivifying rays of the sun will soon cause the buds of the flowers to expand, and, quitting their confinement, open their ripening beauties to the face of day. They will appear with a beautiful bloom, and exhale the most fragrant perfumes. So will the heart of the miser be opened when the rays of divine grace shall beam light upon his soul. His unfeeling nature and contracted mind will yield to the penetrating influence of truth, and his heart become susceptible of social affections, and alive to the feelings of humanity. He will then no longer be the slave of selfishness, nor the prey of sordid cares; his love will become universal; he will feel the affection of a brother for the deserving; and his generous soul will know no bounds in its expansion, nor suffer any restraint in cheering the comfortless, and ministering unto the afflicted.

When I view the yet tender buds of flowers, I think of you, ye amiable youth! The beauty and energy of your souls are not yet displayed; your faculties are not yet expanded; and the hopes of your fond parents not yet confirmed. When walking forth into the fields and gardens, you behold the budding flowers, consider that you are in a similar state; as you look for their expansion, so your parents fondly watch the gradual unfolding of your faculties. They do every thing for you, and neglect nothing that can promote your instruction and advance your improvement; they watch over your education with the tenderest care, that at first by blossoms, and then by choice fruit, you may become useful to society, and be the joy of your parents, and their consolation and support in the evening of their days. Do every thing in your power to gratify their dearest hopes, and profit well by their instructions; to the end that you may become wise, amiable, and virtuous. And beware of following all the suggestions of youthful fancy, or giving way to the ebullitions of desire and the wild fury of passion, which will blast your innocence, destroy the sweet sensibility of your heart, and render your mind base, gloomy, and wretched. "In the morning of life I flourish like the opening bud. My heart beats with joy, and throbs with fond delight; I riot in the luxury of hope, and anticipate with ecstasy the pleasures of futurity. But if I yield to the insinuating poison of young desire, and slide into the false sweets of pleasure, my heart would early pulsate only to the tears of bitterness, or its vital stream be consumed by the ardency of an impure

MAY XI.

Indefatigable Labours of the Bee

The season of spring affords us an excellent opportunity to observe the labours and industry of the bees; and the sight of a hive is certainly most beautiful. A wonderful degree of interest is excited in the contemplation of a laboratory where thousands of workmen are differently employed. Our astonishment increases as we behold the regularity of their labours, and the abundance with which these magazines are furnished for the support of their numerous inhabitants during the winter. And still more admirable is the indefatigable assiduity and unceasing labours of this little republic. Bees give an example of diligence and activity which is not only uncommon, but has perhaps never been equalled.

As soon as the last traces of winter have disappeared, they begin to come forth; sometimes so early that there is reason to fear the cold is sufficiently strong to injure their delicate limbs. Even before the juices of flowers which begin to open, are sufficiently acted upon by the heat of the sun to furnish a large supply of honey, the bees collect a little for their subsistence. But as the spring advances, and in the summer, their cares and activity are redoubled: in these seasons they are never idle; they work incessantly, and neglect not the smallest profits that will increase their store. They are so indefatigable in the construction of their cells, that we are informed a comb with double cells and sufficiently large to contain three thousand bees, is finished in twenty-four hours.

The work is jointly undertaken by all the members of the republic; whilst some collect the wax, and prepare and fill the magazines with it, others are busied in different labours. Some build cells with the wax; others knead and perfect it; some gather honey from the flowers, which they deposit in the hive for present nourishment and future support; others close the entrance of the cells with a covering of wax in which they have preserved their winter's store of honey. Some distribute nourishment to the young ones, and close with wax the habitations of the small grubs that are near the time of their metamorphosis, to the end that they may work more securely. Some fill up with a glutinous matter all the holes and clefts of the hive, and plaster over the weak parts, that neither wind nor insects may gain admission. Some drag the dead out of the hive for fear of infection; and if the bodies are two heavy, they plaster them over with a glutinous substance, or with wax; and so cement it, that no effluvia can exhale through the coating.

It is not enough for us to admire the activity of these little creatures; we should make them our model, and endeavour to imitate the example of their industry. We have many more incitements to action than they have; we possess an immortal soul. This should render our diligence constant, and our applications incessant, that we may avoid the way to ruin, and preserve the sure path to happiness: and nothing more effectually incites to this, than the reflection that the fruit of our labours lasteth for ever. The bee gathers its sweets not from itself only, but for its masters; while our labourers in the vineyard of wisdom and of truth secure to ourselves the fruits of eternal life.

May we never be slow to do good, nor remiss in performing the duties of our vocation with all the zeal and fidelity of which we are capable. Let us execute without delay the task imposed upon us, and work while it is day, for the night cometh when no man can work. "May we each shew the same diligence to the full assurance of hope, unto the end that we be not slothful, but followers of them who through faith and patience inherit the promises; for the winter of the age and the tribulation of sickness approach, and the hour of death hasteneth." Look to the bees for instruction; consider their labours, and contemplate their works; admire their activity and unceasing industry. Always busy, always indefatigable, they rise with the morning, prolong their toils to the evening hour, and support without shrinking the troubles of their short life. And shall man repose in idleness, and lie on the lap of indolence; shall he, endowed with the immortal gift of reason, consume his days in frivolity, and waste his nights in foolish sports or hurtful pleasures? The period of our lives is short; may we devote it to labour for the glory of God, the welfare of our souls, and the benefit of our fellow-creatures.

MAY XII.

Nourishment of Animals.

THROUGH all the gradations and varieties of animals, from the ponderous elephant to the almost imperceptible mite, no terrestrial creature can live without food and nourishment. From the eagle that in her bold flight braves the meridian sun, to the minutest fly; from the whale to the smallest worm, nothing living can exist without sustenance. And in forming these creatures with the necessity of having food, God has provided at the same time such an abundance and diversity of aliment, that each creature may receive that nourishment which is most proper for its subsistence. As many different species of animals as there are, so many different kinds of food are destined for their nutriment; so that every creature upon the earth finds food adapted to its nature.

In this view we may divide animals into three principal classes. The first comprising all those which are nourished by the flesh of others; some of these, as the lion, prefer quadrupeds; others, as the pole-cat, fowls; others fish, as the beaver; and others insects, as different species of birds. The second class will comprehend those animals which derive their nutriment from the vegetable kingdom. Almost every species of vegetables is the food of some particular animal. Some prefer grass, others the fruit of trees; and among those which live upon the same plant, there is a great difference of choice; some preferring the root, others the leaves, the stalk, the seed, the fruit, and some are fond of the whole plant. The third general class includes the greater number of insects, the particular nature of whose aliment it is difficult to determine.

We may now see the propriety of these words of the Psalmist: "All creatures look unto Thee, and Thou givest them their meat in due season. Thou openest thy hand, and satisfiest all things with that which they desire." These cares of Divine Providence evince that eternal goodness which is diffused throughout the universe. If we reflect upon the prodigious number of animals which exist; the many thousand species of insects and birds; the millions of terrestrial animals in every part of the globe, that have their abode in the forests, in the fields, on the mountains and in the valleys, in the caverns, and in the holes of the rocks, in trees, and in the earth; the innumerable shoals of fish that inhabitant the ocean, the seas, the rivers, and the brooks; the infinite variety of insects, in the air, in plants, and on animals; each of which daily finds an ample support, and an abundance of food; we shall be lost in admiration at the wisdom of the munificent Creator, who nourishes them all, and gives to them severally the aliment most adapted to their nature. From this wonderful diversity in the food of animals, nothing that nature produces is useless, but tends to the support of some one of her numerous progeny. From all this we may draw a most happy conclusion: that if God thus provides for her creatures destitute of reason, he will not do less for man, whom he has favoured with the blessed gift of reason, and to whom these animals are subservient.

MAY XIII.

Senses of Animals.

In every animal the organs of sense are arranged in a manner most conformable to their nature and destination. By means of the senses they take cognisance of objects, whether near or at a distance; and through them they are enabled to provide for their wants, and to shun the dangers with which they are threatened. That sense by which animals are able to form an idea of material objects by touching them is called feeling, which is chiefly resident in the extremities of numerous nerves covered by the skin.

The organs of taste are the tongue and the palate; the savoury impressions are made upon the nervous papillæ, which are the immediate instruments both of taste and feeling, between which two senses there is considerable analogy.*

The organ of smell is the delicate membrane which lines the inside of the nose; and by means of the ramifications of the nerves upon the membrane, the odoriferous vapours that float in the air are received, and those animals which require a more delicate and subtle smell have their olfactory organs more perfect. Worms seem to be destitute of this sense, as are in all probability fish and insects; though the antennæ of the latter may serve them instead. By means of smell, animals are enabled to hunt out their food, to select that which is most suitable for them, and, by being apprised of the approach of their enemies, to preserve themselves from danger.

By hearing, animals become susceptible of the vibrations of air; but the structure of the ear is not alike in all: some, as the lizard, have two tympanums; others are destitute of several parts common to the rest. Birds and fish have not that part called the meatus auditorius, and worms and insects are compleatly deaf.

The eyes are the organs of seeing. Quadrupeds, fowls, fish, and amphibious animals, have two eyes, one on each side of the head. Insects are generally furnished with more than two. The spider and the scorpion have eight; and many possess them by thousands, commonly collected in two orbits. In a fly sixteen thousand eyes have been enumerated; in a beetle, six thousand three hundred and sixty-two; and in a butterfly, thirty-four thousand six hundred and fifty. Fish have no aqueous humour; but the crystalline lens is nearly globular.

All the organs of sense are disposed in a manner not only most suitable to the structure of the body of the animal, but also to answer its different necessities. To be convinced of this, a few observations will suffice. As the eyes of many insects are immoveable, and consequently in many cases would be useless, nature has given them antennæ, by means of which they are informed of what would be injurious to them, or what might otherwise have escaped their sight. eyes of fish are disposed with equal wisdom. An eye that projected far out of the head would be very inconvenient to them, and we find their cornea is nearly flat; to remedy the defects of this, the crystalline humour is globular, which in most other animals is lenticular, and much more flat. Though eyes are generally spherical, there is great diversity in their figure; and their situation in the head is various, according to the different destination and necessities of the animal. In man, who sees little but what is straight before him, the eyes are situated in the fore part of the head, but so arranged that they can receive impressions from the whole simicircle of objects before him. In birds, the eye is so placed, that it can take in at one view nearly the whole circle of objects around it, by which means they can provide their food more easily, and are less liable to be surprised by enemies.

The ear of man has that form which best suits his erect posture; in birds it is particularly adapted to occasion no impediment to their flight, and for this purpose it does not project, but is close, to allow of their rapid progress through the air. Thus, though we know but a small part of the wonderful mechanism of animals, we see enough to convince us of the wisdom displayed in their organization, and in the arrangement of their organs of sense. And the more information we gain, and the more discoveries we make, upon this interesting subject, the more cause we find to admire the wonders of nature, and to adore the goodness of God. Let us not then treat any animal, however insignificant, with contempt or indifference; they all bear the stamp of divine impression, and like ourselves have one common Parent, who is God over all.

MAY XIV.

Order observed in the Succession of Flowers.

Every plant springs up in the earth in the order which is prescribed to it. There is a time appointed for one to unfold its leaves, for another to flower, and a third to fade and die. The snow-drop showed its delicate flower above the ground several weeks since, long before the trees ventured to unfold their leaves, even whilst ice and snow still covered the earth. The crocus next appeared, timidly shrinking from the impetuous winds; at the same time were seen the sweet violet and the auricula. These were the joyful harbingers of the numerous flowers that now refresh us.

At this period also a succession of flowers is observed, and every month exhibits new ornaments peculiar to itself. The tulip begins to develop its rich leaves and flowers; and speedily the beautiful anemone will form its full round cup, the ranunculus expand all the magnificence if its leaves, and the opening rose spread its beauties to the morning sun, and fill the air with its perfuming fragrance; nor will the elegant pink, with its graceful charms, be wanting in the beauteous assemblage.

By the wise arrangement displayed in the regular succession of flowers we derive the greatest advantages; for if they all flourished at the same time, we should either have them in excessive abundance, or we should experience a total privation. But now, that each species has its determinate time and season, we can contemplate them at our leisure, and enjoy them with greater convenience; we can dwell longer upon their beauties, and examine each singly without the confusion of numbers. And by the constant succession of flowers we do not suffer from the shortness of their ntinuance; for the pain of seeing one die is solaced by the budding of another, and our gardens during a great part of the year present, as well as attract, the face of youth and beauty. The field of nature is open to all, and he who prefers the sting of thorns may gratify his inclination as well as he who delights in seeing flowers and sweet enjoyment attend upon all his steps. As flowers succeed to each other, so do the individuals composing the human race, as some are born, others are returning to their native dust; and as some are just beginning to be useful to the world, others are leaving the great theatre of life whilst new actors begin to play their parts.

MAY XV.

Zoophites.

ZOOPHITES may be considered as insects partaking both of the nature of an animal and a plant. By their external configuration, their remaining in one place, and their producing themselves by buds and seeds, they very much resemble plants; like which they also may be propagated by grafts and slips. Their animal nature is only known by their sensibility and voluntary motion. The greater part of Zoophites put forth a kind of root in the sea and waters where they live; some of them grow in stony calcareous substances, and others are covered by a shell, which resembles horn, whilst many are soft and fleshy. They all possess in common the power of self-producing new zoophites; and whilst the young ones are attached to the parent stalk, they form but one animal; but as soon as they are separated from the stem, they have a proper existence by themselves.

Zoophites also multiply themselves in a way very similar to that of plants. They form a species of germ containing a young zoophite, which grows for some time on the stalk, and, at length falling off, becomes a complete animal. They do not appear to possess either brain, heart, veins, or arteries; but their whole body, from the beginning to the extremity, forms a hollow tube, which may be regarded as one continued stomach or intestinal canal. By the discovery of this humble class of beings in the creation, in the beginning of the seventeenth century, the volume of natural history has increased, and our ideas of the gradation of beings extended. The links between animal and vegetable nature are extremely imperceptible, and difficult to define. The only distinguishing characteristic is supposed to be, that plants have neither sensation nor motion, whilst every species of animal both feels and moves; but the shades between these are so finely drawn, as in many instances to be impenetrable to the researches of the curious, who often assert for truth, discoveries which are only within the probability of conjecture.

MAY XVI.

Pleasures derived from the Cultivation of Fields and Gardens.

The cultivation of fields and gardens is one of the most delightful of all occupations, and perhaps the only one the toil of which is recompensed with much pleasure. The greater part of laborious employments confine a man to his shop, or within his house; whilst he who devotes himself to agricultural pursuits breathes always a pure air, and enjoys continually the grand spectacle of nature. The azure sky is his [illegible], and the earth embroidered with flowers his [illegible]uance; Far removed from the murky atmosphere of towns, a thousand beautiful objects present themselves to his view, and he need never want a pure spring of delight, or real banquet of pleasure. Soon as the first rays of morning beam light on the earth, he rises with the lark, and hastes away to his fields, brushing, as he passes, the glistening dew-drops, and inhaling the fresh unbreathed air, sweeter than the rose's perfume.

The joyful songs of the birds gladden the skies, and they express their loves in a thousand sportful sallies. Their sweet carols mark the pleasure they feel in the new day, and the full chorus swells with the praises of the God of nature, whose blessings they again receive in the returning influence of the sun, in their food, and in the sweet attractions of love and gaiety. And surely, no heart can remain unmoved amid this scene of joy and festivity; nor can the mind contemplate a more august spectacle than the perfection of God in the grandeur of his designs and the beauty of his works.

What contributes to render agriculture and gardening more particularly pleasing, is the constant variety and succession of objects always presented to us, which relieve the wearisomeness of continued uniformity and undeviating sameness. We continually observe a vast variety of plants, fruits, herbs, and trees, grow up under our auspices, and assuming every diversity of appearance. Nature leads her followers through a thousand flowery paths, ever diversified by new changes and fresh delight. One while we see plants just peeping above the ground, at another those which have arisen and are fully developed, and others which are in full bloom. Whichever way we direct our view we see new beauties. The heavens above, and the earth beneath, contain exhaustless treasures and boundless delights. Let those who are from necessity confined within the walls of cities sometimes emerge from their smoky atmosphere, and respire a purer air in the country, where their hearts may be rejoiced with a pure and innocent pleasure, and their souls rise up to heaven in aspirations of praise and gratitude to the Author of every blessing.

MAY XVII.

The Tulip.

THE tulip is one of the finest formed and most beautiful of flowers; the fineness of its shape, and the brilliancy of its colours, make it the queen of the garden. And if we consider that each year millions of them blow, all differing in form and beauty, our admiration increases, and we are compelled to acknowledge that so much beauty and elegance cannot be the effect of blind chance, but must have some great First Cause which has produced them in its wisdom and beneficence, the existence of which is sufficiently proved by the tulip in full flower.

Though tulips are now produced from roots, there was a time when they did not exist; and whence was derived the first bulb, and that primitive arrangement, of which all subsequent revolutions are only the development, but from some intelligent cause which we call the Creator? As much power and wisdom are displayed in the structure of a single tulip from which ten others shall proceed, as in the creation of ten at once. Whenever we see a bed of tulips, then, let us not rest satisfied with admiring their beauty; let us also admire in them that wisdom which has formed them with such perfection.

Though the beauties of the tulip are thus so eminently conspicuous, they lose some of their value when we consider they are only to please the sight, for not being odoriferous they cannot gratify the smell; and when we contrast them with the pink, which to beauty of form adds the most exquisite perfume, we forget immediately the richness of the tulip. And this is the case with those vain people, who endowed with personal charms set them off with every additional ornament their vanity can suggest; whilst they neglect, and suffer to remain uncultivated, the powers of the understanding and the virtues of the heart, which alone can render them acceptable to their Maker, and amiable to their fellow-creatures. The beauty of the tulip fades, and the pride of person is laid low; but the beauties of the mind remain to cheer, to delight, and to instruct, when the graces of form are no more; and the virtues of the heart will flourish, when the elegance of shape and the vigour of body are decayed.

The simple annals of plants furnish us with this useful observation, that the more beautiful a flower is the sooner it fades. We shall soon see no more of the tulip than a dry and dead stalk; its beauty and life only last a few short weeks, when its charms are destroyed, its leaves wither, its colours fade, and all that remains of what so lately struck us with its beauty is a sapless stem. Thus we learn from the tulip the little dependance that is to be placed on external advantages; we witness the frailty of beauty, and the short duration of life. For like the flower of the field man groweth up and flourisheth, and then speedily withereth away; his days are few and full of troubles. And may we so live, that when the awful period arrives, the good and the virtuous may regret our loss, and the afflicted and fatherless mourn for our dissolution.

MAY XVIII.

Reflections on Grass.

Though the flowers which the care and industry of man cultivates in the gardens are extremely beautiful, we should know little of the vegetable kingdom if we confined our attention to the contemplation of flower-beds. Every field is equally the wonderful scene of the works of God, and equally claims our attention. Can any thing be more astonishing than the great quantity of grass which grows in one meadow? To be convinced of the prodigious number of blades of grass, we need only attempt to reckon them as they are growing in any given space, and we shall soon be satisfied of their superior fertility over all plants and herbs. All this is for the subsistence of various species of animals, of which fields and meadows may very properly be considered as the granaries.

Another great advantage to be considered in grass, is the little care it requires in its cultivation; and that it will grow and perpetuate itself independent of the labours of man. Since the Almighty Word of God said, Let the earth bring forth grass, the herb yielding seed, whose seed is in itself, our fields have been uninterruptedly fertile, and we have known no deficiency of grass. Its colour is also the most grateful; for who could have borne the dazzling lustre of white, or the brilliant glare of red? If the universal colour had been more dark or obscure, how gloomy and dismal would have been the face of nature! But the ever-bountiful Creator has neither injured our sight with colours which our eyes could not support, nor pained it by obscure gloom; on the contrary, he has clothed the fields in colours that strengthen the sight, and please by their diversity: for such is the difference of shade, that scarcely two blades of grass can be found of exactly the same shade of green. By this arrangement of the vegetable kingdom, God has not provided less for our pleasure than for our advantage, the proofs of which every-where present themselves to our observation; and may we never pass them with indifference or disregard, but may our reason ever be employed in tracing out the perfection of wisdom, and the consummation of goodness, in all the works of nature!

MAY XIX.

Sentiments excited by the Contemplation of the Heavens.

. What Being can have formed the superb vault of heaven? Who has given motion to those immense globes of light, whose continuance is perpetual, and velocity inexpressible? Who has commanded the vast masses of inert manner to assume so many and various forms? Whence are derived the connection, harmony, and beauty, of the whole; and who has determined their proportions, and set limits to their number? Who has prescribed to the planets laws which, during the lapse of ages, remained undiscovered till the sublime genius of a Newton unfolded them? Who has defined the vast circles in which the various stars roll in endless spheres? And who first commanded them to move, and continue their course in uninterrupted progression? All these questions lead us to thee, our adorable Creator! Self-existing, infinite Being! to thy intelligence and supernal power all these heavenly bodies owe their existence, their laws, arrangement, force, and influence!

What sublime ideas the contemplation of these grand objects raises in our souls! If the space where so many millions of worlds are revolving cannot be measured by our understanding; if we are lost in astonishment at the magnitude of the spheres! if the edifice of the universe, which the Almighty has formed, be so immense that all our ideas are confounded in its contemplation; what must Thou be, O God, and what understanding can comprehend thee? If the heavens and all their hosts are so majestically grand and beautiful that the eye is never satiated with their splendour, nor the mind satisfied with the contemplation of their wonders, what must Thou be, O God, of whose glory these are but faint shadows and feeble images? What must be the infinity of Thy powers and the extent of Thy wisdom, when Thou seest at one glance all the immense space of Heaven, with its revolving worlds; and when Thou penetratest into the nature and properties of every existing being! Thou who hast formed these admirable plans, who hast calculated every thing, and weighed all in Thy balance; who hast established the laws of the universe, and proposed to Thyself the most sublime ends; in the contemplation of Thee I am lost in sublimity, and prostrate myself before the throne of Thy glory, unable to behold Thy refulgence!

MAY XX.

Fecundity of Plants.

The magnificence of the terrestrial part of creation is never more conspicuous than when observed in the astonishing fertility of plants. A single plant produces millions of others. One tobacco-plant produces forty thousand three hundred and twenty grains of seed; and if from this we calculate the produce of four years, we shall find that there may be produced two millions six hundred and forty-two thousand nine hundred and eight billions, two hundred and ninety-three thousand three hundred and sixty-five millions, seven hundred and sixty thousand grains of seed. An elm of twelve years growth often has upwards of one hundred thousand grains of seed; and what a prodigious number must spring from these in the course of a few years! Suppose it has not more than one hundred thousand buds, and that the shoot of each year contains only five, there would be every year five hundred thousand plants which may be considered as new. If we add what is produced by the extension of the root by grafts, &c. we shall be astonished how the earth finds means to support the numerous family of plants.

We must also recollect the innumerable multitude of animals that receive their nourishment from the vegetable kingdom; they annually make so great a consumption of plants, that if nature had not endowed vegetables with very extraordinary prolific powers, we should soon have reason to be apprehensive of their total destruction. Sometimes indeed the very animals that devour them are instrumental in their propagation; birds for instance, in eating the fruit, often swallow the kernels, which they afterwards deposit in the earth without any injury; and whilst pecking certain fruits, they often scatter the seeds to a considerable distance; and this dispersion is requisite, that one species of plant may not occupy a whole field. For this purpose also, certain seeds are furnished with a sort of wings that may be more readily dispersed by the wind.

Plants are much more prolific than animals; of which we shall be fully convinced by comparing them together. Plants annually produce many new ones, and sometimes continue to do so for centuries; whilst the largest animals, as the elephant, the mare, &c. only produce one, or at most two, yearly; and are often entirely barren. Small quadrupeds, as the dog, the cat, the rat, &c. though much more fruitful, by no means equal the fecundity of trees. Fish and insects approach nearer to it; the tench deposits about ten thousand eggs, the carp twenty thousand, and the cod a million. But if we compare this fecundity with that of the wild rose, of the mustard-tree, and the fern, we shall find that these and many other plants multiply much more than fish or insects; besides, they are propagated by many different ways, whilst most animals are confined to one mode of multiplying their species. A tree may produce as many new trees as it has branches and leaves.

From these considerations we may learn how wisely God has regulated the continuation of the vegetable and animal species. If the multiplication of vegetables were less considerable, many animals must perish from want; our fields, meadows, and gardens, would be entirely desert, or enlivened with a very few plants scattered up and down; and had the Creator thought fit that the animals which live upon vegetables should become more numerous than the plants, the vegetable kingdom would be exhausted, and many species of animals would perish. But from the wise relations subsisting between the two kingdoms, the inhabitants of each multiply in a just proportion, and no species is destroyed. Thus, pleasure and abundance every-where surround us. For man, the Creator has given to vegetables their fecundity; and for his nourishment, pleasure, and health, such a multitude of plants are produced. Their number cannot be expressed, and thus affords an image of the immensity and omnipotence of God, who through all the kingdoms of nature opens his hand and satisfies the desire of every living creature.

MAY XXI.

Description of the Beauties of Spring.

NOTHING is more worthy of admiration than the revolutions effected throughout all nature by the influence of the spring. As autumn declines, every valley, every meadow, and every grove, presents us with an image of death: and in winter nature is entirely divested of beauty; every animal is sorrowful, the inhabitants of the groves hide themselves and are silent; the earth becomes desert, and all nature seems to suffer a state of torpor and insensibility. However, at this very time she is working in secret, though we are ignorant of the happy principle which is preparing her renovation. Life returns to animate afresh the benumbed body, and every thing prepares for a similar restoration. In trees alone, what a multitude of changes take place. At first the sap, which during the winter had entirely abandoned the trunk and branches, slowly rises in the small vessels by means which we cannot discover: it soon penetrates the buds, which disclose a thousand wonders; the leaves with their beautiful green; the branches, which are to shoot between the unfolded leaves, with new buds attached to them, and full of invisible leaves; the multitude of flowers, with the sweet exhalations which scent the air; in these blossoms fruit, and in those fruits the seeds of an infinite number of other trees.

The brightness of the sun rejoices the soul, and the activity of nature in the plants which surround us is highly pleasing. Every field delights with its beauties and pleases with its grateful fragrance, and every bird pours forth its varied melody. How cheerful are the notes of the linnet as it flutters from branch to branch, as if to attract our regard! The lark joyfully soars aloft, and hails the day and the coming spring with her melodious strains. The cattle express the vigour and joy which animate them; and the fish in the rivers, which [illegible] lay at the bottom of the water [illegible] surface, and express their vivacity [illegible] sallies.

How is [illegible] we can so often see [illegible] objects without experiencing the most profound [illegible]ration and reverence for the infinite Being whose power is so gloriously manifested. Never should we breathe tho pure air of spring without such feelings being awakened; let us never contemplate a tree in leaf, a field waving with corn, a flowery mead, a majestic forest, or beautiful garden, without reflecting that it is God who has given us the shade of the trees, and the beauty and fragrance of the flowers; that it is He who clothes the woods and the meadows with the verdure which delights and refreshes; and that He, by whose will and power we exist, has given to every creature life, and all the happiness they enjoy. As nature feels the influence of spring, so the true Christian feels ecstatic bliss, when after having hidden his face for a while, his God approaches and breathes into his soul the happy testimony of his grace and salvation.

MAY XXII.

Language of Animals.

MAN may be considered as the only animal which enjoys the gift of speech; and in this his superiority over other animals is most especially manifested. By means of speech he extends his empire over all nature, and raises himself towards his Divine Author, whom he contemplates, obeys, and adores. By the faculty of speech he is enabled to make known his wants to

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others, and to render them subservient to his interest. All animals, except man, are deprived of this faculty, because they are destitute of that reason by which we are enabled to acquire languages, and to know the use of speech. But as animals possess the power of expressing their wants and feelings by natural signs, and certain sounds or cries, we must allow them a sort of language, though very inferior, formed entirely from the diversity of the tones which they utter.

To form a just idea of this, no very laborious researches or profound investigations are necessary; it will be sufficient to observe the animals which daily come under our notice, and with which we live in familiar intercourse. Let us examine the hen and her chickens; when she has found any thing, she calls and invites them to partake of it: they understand her call and instantly come. If they lose sight of her, plaintive cries express their distress, and the desire they have for her guardian presence. Observe the different cries of the cock when a stranger or a dog advances, or when some bird of prey hovers near; or when he calls to answer his hens. Hear the lamentable cries of the turkey, and see the young brood instantly hide themselves; the mother anxiously looks upward, and what has she discovered? a black point that we can scarcely distinguish; and this is a bird of prey, which could not escape the vigilance and piercing eyes of the mother carefully watching for her flock. The enemy disappears, and the hen utters an exulting cry; her anxiety ceases, and the young ones again joyfully assemble round their mother.

The cries of the dog are very various, copious, and expressive: who can witness without emotion the joy which this faithful animal expresses at the return of his master? He leaps, dances, runs about him with eagerness; now stops and eyes him with most earnest regard, full of tenderness and affection: approaches, licks, and caresses him repeatedly; then again renews his frolicsome gambols, disappears, returns, assumes a variety of sportful attitudes, barks, and declares his joy by a thousand playful gestures. How different are these joyful sounds from those which he utters at night upon the approach of a thief! If we follow a hound or a pointer, how different will be their cries and their motions, according to what they wish to express, and how significant are the movements of their ears and tails.

This may afford us another opportunity of admiring the wisdom of the Supreme Being, who has thus manifested to all creatures his tender cares, by giving them power to express by sounds their feelings and their wants. From their peculiar organization it is impossible for them to utter the language of man; but though destitute of that qualification, they are, through the mercy of God, enabled to communicate their sensations to one another, and even to man himself. They possess the faculty of producing and varying a certain number of sounds; and the structure of their organs is such, that each species has peculiar tones by which it conveys its meaning, with as much perfection as their nature and the end for which they are created requires.

How superior then is man to other animals by his powers of speech! Their language consists in the utterance of imperfect sounds; they are incapable of combining and comparing ideas, and their knowledge of external objects is very limited. Whilst man possesses faculties which enable him to ascend from particulars to general notions, and to separate the object from the qualities which distinguish it; and having obtained this knowledge, he is enabled through his powers of speech to convey it to other individuals. Let us then pour forth the tribute of our praise to the

Almighty for the superiority of our nature, and the great faculties he has bestowed upon us; never forgetting that the most grateful incense which ascends to Heaven is the prayers of the afflicted for those that comfort them; and the blessings of the ignorant who have been rescued from the bondage of darkness, and restored to the cheerful precincts of day, by the superior intelligence of a fellow-being who has devoted his days to the cultivation of his mind and the improvement of his heart.

MAY XXIII.

Number and Magnitude of Creatures upon the Earth.

'The works of the Lord are vast and numerous;' we should have acknowledged this if we had only known those which the earth contains; for how immense is this globe, the abode of so many nations differing from each other! and how many solitudes and deserts are still uninhabited by man! What is still more striking is, that the solid earth does not occupy near so much space as the water; and if the earth itself is an example of the greatness of the works of God, how much more so is that diversity of creatures which it contains!

We find innumerable species of stones, minerals, and metals, concealed in the bosom of the earth; whilst an astonishing variety of trees, plants, herbs, and fruits, adorn its surface. Notwithstanding all the care which has been taken to observe and classify their different species, the work is still far from being completed. Let us next consider the extreme diversity of living creatures which offers itself to our attention! How great the disproportion between the eagle and the fly, the whale and the gudgeon, the elephant and the mouse! and yet the interval which separates them is filled up with living creatures. The various species of animals approach each other so nearly that it is sometimes difficult to distinguish them; and yet these are so multiplied, that from the fly to the elephant they form one vast chain, all the links of which are connected. On the seas, lakes, and rivers, upon the surface of the earth and within its bosom, there is scarcely any space that is not occupied by some living creature.

But however great may appear the number of creatures which come under our observation, it is not to be compared with those which are so small as to elude our perception. With the microscope almost incredible discoveries have been made, of which all who choose may convince themselves. By its means we are presented with a new world, which was before entirely unknown to us: we there see living creatures whose extreme minuteness the imagination can scarcely embody, some of them not equalling in size the millionth part of a grain of sand. And it is not only their number and diversity, but their beauty and delicacy of structure, which excites our astonishment. What nearly escapes the naked eye, when viewed through a microscope has an inconceivable fineness and beauty. Brilliant particles which art cannot imitate glitter in a grain of sand, and particularly in some insects; for example, in the head and eyes of a small fly; and we observe in the structure of the most insignificant of beings the utmost symmetry and most admirable order: in short, we find millions of creatures so small that the eye cannot distinguish them without a glass, which have, notwithstanding, an organization as perfect in their species, and are as proper to fulfil the design of their creation, as the larger animals with which the earth is peopled.

Considerations like these are well calculated to teach us the knowledge of our own littleness; we seem to be lost in this innumerable multitude of the creatures of God, which would amply suffice to declare his power, though the whole human race were swept into annihilation. How immense is the empire of nature! in every element are beings created and preserved: every grain of sand is an habitation for insects which rank amongst the creatures of God, and are links in the vast catenation of created nature. The more we meditate upon the grandeur and diversity of the works of God, the more we feel the limits of our understanding, and our ideas are confused by infinitude. Though we add number upon number we shall never be able to find a sum equal to the amount of all the creatures which inhabit the earth. Let us then in silent reverence adore the wisdom of the immeasurable God.

MAY XXIV.

Spring an Emblem of the Frailty of Human Life, and an Image of Death.

At this season we need not search far for images of frailty and death; they every-where present themselves connected with the beauties of nature. The design of the Creator in this seems to be, to warn us of the inconstancy of terrestrial things, and to check that dangerous inclination which we have to place our affections upon objects which being vain and transitory should be repressed. Spring is the season in which plants receive a new life, and in which many of them perish. However serene are the days of spring they often suddenly become darkened by clouds, by showers, and by tempests. Sometimes the morning dawns in the fulness of beauty; when, ere the sun has gained the mid-heaven, the lustre which flattered our hopes of a fine day vanishes from our view; at other times our most favourable hopes are realized, and we enjoy all the attractions of spring in full perfection. But how fugitive are these happy days, and how precipitate their flight! Whilst we are eagerly courting their presence, they vanish from our grasp; and thus fly the fairest hours of life, even as fleeting moments of spring. The morning often meets us with smiles, and promises us nothing but joy and happiness; but ere the evening comes, even before we have attained the noon, we experience the desolation of misfortune, and the bitterness of grief; woe marks our course, and affliction follows our steps.

Let us pause for a space, and consider the years of our youth, which we may regard as the spring of our life; how fleeting were the pleasures of our then tender age! Many and various as they were, perhaps none of them now remain. Where are fled those happy moments when, strangers to care, we gave ourselves up to the intoxicating influence of joy, and the enthusiastic rapture of unrestrained imagination? Where is now that gaiety of heart that was wont to sparkle in the countenance and cheer the admiring beholder? And where those roses which once bloomed in our cheeks? We now no longer feel the turbulence of pleasure, the enthusiasm of ardour, nor the rapturous fervour of delight, which were wont to fire our senses and intoxicate our souls. We remember those happy days no more, but as the illusion of a dream, or as some pleasing phantasy that plays upon the imagination, and suddenly leaves us in all the consciousness of a weary existence. But it is not so with those who in their morning of life looked forward to the time when to learn is painful, and again to grow young impracticable; who, instead of expending the ardour of youth in the pursuit of tasteless frivolity or hopeless dissipation, gathered with unceasing toil and unwearied assiduity the rich stores of wisdom, the enjoyment of which will ensure to them a measure of felicity, whilst the mere butterflies that flutter in the sun-beams are buried in the gloom of oblivion.

Every-where does the spring declare, in the expressive language of truth, the decay of life and the uncertainty of time. We now see the trees in the pride of verdure, adorned with their beautiful blossoms; but in a few days, these will be no more. All those tender flowers, whose beautiful forms diversify nature, will perish in the same season that gives them birth. Like these, the period of human life is short, and its longest duration may be compared to a day of spring. Death suddenly closes our eyes in night, even when the crimson tide of health promised us the succession of many years. Often the canker-worm of disease is secretly gnawing the heart, whilst the countenance yet beams the lustre of health and the radiance of youth. Yet, though the charms of youth are blasted, as the glory of the valleys is sometimes darkened by the north wind, or as certainly as the pride of the garden fades; though we fall like the rose which blooms to-day, and to-morrow withereth; let us not repine nor mourn at our fate; but let us enjoy all the charms of spring, and the blessings of life, which the Creator has graciously bestowed upon us. The thoughts of death can never destroy the pleasure of the virtuous, nor lessen the delight of innocence and the enjoyment of purity. Far from filling the mind with dismay, and rendering gloomy the heart, the certainty of death teaches us the insignificance of all terrestrial objects, and leads us to repose upon the Supreme Being, in the hope of quitting a world where every thing is perishable, for the regions of eternal glory and endless felicity.

MAY XXV.

Spring emblematical of the Resurrection of the Body.

Most of the flowers which we now admire, and which so beautify the earth, were lately rough and shapeless roots. This may present us with a beautiful emblem of the resurrection of the righteous, and the re-animated state of their bodies. As the roots of the most exquisite flowers, while buried in the earth, are destitute of form and beauty, but when in bloom have a thousand charms—so the human body, which in the precincts of the tomb is the object of horror and aversion, in the day of resurrection will experience a most astonishing change; "for what is sown in corruption is raised in incorruption; what is sown in dishonour is raised in glory." As soon as the first mild days of spring appear, life and joy succeed the melancholy impressions excited by the rigours of the winter; and cause the chilling blasts to be forgotten. So will man in the great day of resurrection forget all his troubles, and no longer remember with pain the afflictions of his past life. Whilst in this state of existence, anxiety lowers on our brow, and our countenance often expresses the language of sorrow; but soon as the cheering rays of a new creation shall enlighten our souls, grief will be no more; no clouds will obscure the serenity of our days, and a heavenly joy will gild all our moments.

Spring is the joyful season when the earth undergoes a general renovation; if in the winter it seemed dull and lifeless, it now appears altogether gay and attractive. Every object delights us, and we seem each spring to enjoy the pleasing variety of a new world. So also on the day of resurrection will the just man be transported into a new and delightful region. The new heaven and the new earth will be free from all the evils which now so often trouble us; peace, order, beauty, and justice, will render our future abode more happy than the most ardent imagination can conceive to be possible.

When the heat of the sun's rays has penetrated the earth, thousands of plants and flowers rise up out of its bosom. So will it be on the great day, when thousands of generations shall arise from the dust in which they have been buried. As the flowers of spring come forth from their seed decked in beauty and splendour, so the bodies of the righteous which have been deposited in the earth shall one day arise, encompassed with glory and arrayed in beauty. Spring is the epoch of vegetation for grass, flowers, and every species of plants; it is then that every thing which has pushed above the surface of the earth developes itself more and more every day, and visibly increases its strength and beauty: and the day of the resurrection shall be to the soul of the Christian the epoch of the boundless progress he will make in all good; no weakness will detain, no obstacle impede him on his way in the path of perfection; he will proceed from virtue to virtue, and from felicity to felicity. In spring all nature seems to arise as from a state of sleep to praise its Author: the notes of all the inhabitants of the air swell in one universal hymn to glorify the Being who formed them; and, in the joyful hour of resurrection, similar songs shall ascend from the children of God, who have received new life and immortality.

MAY XXVI.

Attractive Power of Bodies.

We often see two bodies approach each other without being impelled by any external force. The cause which produces this effect is called attraction, or that principle whereby the minuter particles of matter tend towards one another. This power of attraction is one of the principal agents of nature: by its operation fluids ascend in capillary tubes; and it is in some degree the cause of the juices circulating in the capillary vessels of plants and animals. The expansive power of the air also contributes in plants to this effect, for a portion of air is found in the fluid by which they are nourished. Vegetables are also provided with air-vessels, which imbibe the external air, and assist the ascent of the sap; but the chief cause of this phenomenon is capillary attraction. It is well known that a series of capillary tubes exists in the human body, where the fluids are in continual motion; and this motion is partly regulated by the laws of attraction. Many of the phenomena we observe in the material world have this attractive power for their principle, and by it is most satisfactorily explained the motion of the heavenly bodies. These spheres, separated from each other by immense intervals, must be united by some secret bond, to form such a perfect whole as the solar system. It is now generally admitted, that the union of these heavenly bodies, their direction, the law which prevents them from deviating from their prescribed route; the motion of the planets and comets round the sun, all depend upon the attractive power of that star, and the gravitation of these bodies towards him. How admirable is that wisdom which, by means of the same law, causes the vegetation of grass and the motion of the universe.

All these reflections lead us to glorify the Supreme Wisdom. If it manifests itself in the government of the celestial bodies, it is equally apparent in that of rational creatures. The Creator always acts upon iples equally wise, after the same laws, accomplishing every thing with the greatest simplicity. But we are often so blind as not to acknowledge him, because we imagine that he only appears in things which possess grandeur and brilliancy. When cities and provinces are devastated by an earthquake, inundated with water, or consumed by fire, our attention is arrested; and in these convulsions of nature we perceive the traces of Providence. But why do we not perceive him equally in small things? why do we not behold the marks of his wisdom in the common occurrences of life? Is it only extraordinary events that proclaim the power and justice of God? Is it not equally displayed in the smallest blade of grass as in the motion of the heavenly bodies? To be convinced of the wisdom and goodness which are manifested throughout the kingdom of God, we need not go to distant places, or seek amidst remote objects. We need only dwell on what relates to ourselves, and to the particular dispensation of Providence in our own behalf.

MAY XXVII.

Complaints of Men against the Law of Nature.

"WHY is the human body, from its constitution, subject to so many accidents and infirmities?" Let him who asks this question say if it is possible to figure to himself a body which can unite more advantages than that which he has received from his Creator! It was incompatible with the nature and catenation of things below, that man should be provided with a body that was invulnerable. Though some are deformed, others lame, and deaf and dumb, we have no reason to murmur at the decrees of Providence. These defects are not so frequent as to give us occasion to repine; and those who are still disposed to complain would do well to reflect on the following truths.

It is useful to the generality of men that some examples of the defects to which the human body is liable should now and then occur; for when a healthy and sound person compares himself with one who is not so, he at once perceives all the advantages of perfect and well-formed limbs; he learns to prize a gift of whose value he was before ignorant, and is more careful to preserve it. How precious is each eye, each organ of sense, each joint and limb—more dear to us than the richest treasure! Our body is more beautiful and regular than the most superb building, more excellent than the most exquisitely wrought machine; and yet, inferior as these are, we are far from attributing them to blind chance.

“Why are some countries of the earth so different from one another; sometimes cold, sometimes wet, sometimes low, at others elevated?” If thou, O man! hadst the power of forming a globe, where every thing should contribute to the welfare of men and animals, would thy understanding furnish thee with the plan of one better than that of our sphere? The countries of the earth produce, by means of their diversity, exhalations and different winds, from which results that medium of air, which experience teaches us is best adapted to the health and comfort of animal life, and the promotion of vegetation. “It is, however, incontestable that the variations of weather are not advantageous to all men and to all countries.” But has not the weather which has preceded an influence upon that of another? Is it in our power to judge of the whole? Are a thousand husbandmen to sigh for a shower, because the continuance of a drought will accommodate the arrangements of *one* house-wife? A certain state of air will occasion in some places a degree of sterility; but can that be called an evil which prevents the impurity of the atmosphere? Should an east wind, benefiting a whole country, cease to blow, because from its violence some ships are wrecked, and some particular people injured? Is it just or reasonable to blame or remark imperfections in a part, when we cannot comprehend the whole? "Why are there so many noxious animals?" Does any one think that no rapacious animals should exist upon the earth? Let such people reflect, that, by the beasts of prey, the number of animals which would be troublesome to us is diminished. And it is because many animals serve for food to beasts of prey, that the number of living creatures is preserved. If these rapacious beasts did not exist, the carcasses of the animals they devour would be rather prejudicial than useful. The animals thus devoured are replaced by others, and the population is regulated by the means of subsistence; hence flies and many insects would perish for want, if the animals which feed upon them did not thin their numbers.

"Whence is it that the Creator has regulated the course of nature by such invariable laws?" Is it not precisely by means of this arrangement that man, assisted by nature and guided by experience, is enabled to make use of his understanding and of his powers, and become in some degree the worker of his own good? Would we wish to dwell in a world where we should have no occasion for activity; where none of our pleasures could be increased by any exertions on our part; where there was no rule or fundamental law; and where the alternations of good and evil, of pleasure and of pain, being unknown, we should have nothing to render us attentive to the laws of nature?

There will ever be a number of things in nature, the designs of which, and the relations they bear to each other, must remain concealed; and we may find some, which, to our limited understanding, appear contradictory, and little adapted to the plan of the Deity. But in such cases, let us bear in mind that God performs every thing with the wisest and most beneficent views; and when any doubts and difficulties shall arise, let us say with the apostle—"O the depth of the riches both of the wisdom and knowledge of God! How unsearchable are his judgments, and his ways past finding out! For who hath known the mind of the Lord? Or who hath been his counsellor? For of him, and through him, and to him, are all things; to whom be glory for ever. Amen."

MAY XXVIII.

Of the Sins to which we are most prone during the Spring.

Is it possible that we can profane, by sin, that season which of all others should more especially animate us to the practice of piety? Is it not natural to suppose that in these beautiful days every field would be a temple where we might offer up the incense of a grateful heart, and the thanksgiving of a virtuous mind; where every thought, sentiment, and action, should tend to the glory of our Creator? But, alas! we daily witness the ingratitude of men towards their heavenly benefactor; they see nature renewed, they see the flowers that had decayed revive, and a variety of pleasing objects every where attract their notice, without ever thinking of their Maker, and rendering unto him the just praises of his excellence. This odious vice of ingratitude, the source of much iniquity, is most evident at this season; and shall man, the only creature in the universe capable of reflecting upon his happiness, be the only one insensible to it?

It is to such an unfeeling and ungrateful soul that I now address myself; but I can scarcely expect my feeble accents to penetrate within the recesses of thy heart, when the voice of God has been heard in vain, and the energetic and expressive language of nature disregarded. Canst thou forget thy Creator, when all his works declare him? If thou knowest not thy God, thou canst neither know thyself nor the world in which thou livest. Every creature reminds thee of its Author; every place in the vast dominion of nature is full of the Deity. He manifests himself in every blade of grass; in every flower, and in every bird, he speaks the sweet and persuasive language of nature; he addresses himself to thy senses, to thy reason, to thy conscience, and to all thy faculties. Listen to this language, and thou mayest become sensible and grateful.

How dost thou employ these fine days of spring? Surely thou shouldst emerge from thy chamber and visit the treasures of the fields, and the beauties of the gardens, where thou mightest inhale a pure and balmy air. But beware of yielding to the extravagance of sinful pleasures; in whose train follow anguish, disease, and infamy. Truly to enjoy the beauties of spring and all the delights of the season, is to observe with attention the works of nature, whilst thy reason informs thee of the power and wisdom of the Creator there displayed; thy heart will then experience raptures infinitely superior to the pleasures of those who forget their God.

Let us now turn our attention to those who in this season are the slaves of care, and fear they shall not be able to find the means of subsistence. O ye of little faith! Behold the lillies of the field how they grow; consider the fowls of the air, they sow not, neither do they reap, yet their heavenly Father feedeth them. Be assured then, and put your full confidence in God. Spring is the season of hope, give a place in your bosom; and when doubts shall assail and fears come upon you, cast your view abroad over the fields and meadows, and remember the words of your Redeemer: "If God so clothe the grass of the field, if he feed the fowls of the air, how much more will he nourish thee, O thou of little faith!" The wicked only have cause to fear for the future; but he who unites integrity to industry, and virtue to intellect, will ensure unto himself a portion of comfort here, and ever-during felicity in the world to come. Let us then rejoice in our existence, and while we employ this delightful season of the year in contemplating the works of nature, look up with joy and gratitude to him who has given us the glorious privilege above millions of other creatures, of knowing the God of nature is the sole author of all happiness.

MAY XXIX.

Harmony of Bees.

The comfort and happiness which bees enjoy are in a considerable degree owing to their harmony and patriotism. At least, it is evident that their community must be immediately destroyed if they did not live together in a state of union. From the observations of those who have investigated this subject, it appears that these insects return to their hives laden with the materials for building their cells, and there are others in waiting to ease them of their burthen. They again sally forth, and whilst they are collecting fresh materials, those which remain in the hive knead together the little parcels which the others have brought, and thus prepare a mass proper for building. Others, which are not immediately employed in working, render kind offices to the labourers, and bring them food, that the work may go on without interruption.

The patriotism of bees is not less than their harmony. The wealth of the whole state consists in the riches of each citizen; and this numerous republic forms but one family, in which is no personal interest, no avarice, and no rapine: here no troop of bees unites to do violence to, or fight against the interests of, each other; no bee is ever found living in luxury and superfluity, whilst another is destitute of the necessaries of life; nor are they anxious to acquire more honey than will suffice for their winter's provision.

Insignificant as these insects may appear, we may learn from them those virtues upon which depend the repose and the happiness of our lives. In whatever state or condition we may be placed, it is necessary for us to act in concert with our fellow-creatures, and to cultivate the virtues of patriotism; the society in which we live, Christianity, and our own happiness, demand it. Let us cheerfully bear our part of the general burthen, and, if it is necessary, charge ourselves with the burthen of another, who from ignorance or weakness is unable to support it. And when our duty, our conscience, and our religion, require us to make sacrifices for our brethren, let us never regard it as a loss; but rather consider it as an honour that we have been capable of labouring with more zeal and success than others. Let the base principles of selfishness never find a place in our hearts; they who endeavour to enrich themselves at the expense of another, and to appropriate unto themselves alone the treasures of their country, are despicable members of society, who have forfeited their dignity, and sunk beneath the level of brutes. Whenever we are in any degree able to contribute to the general good, let not the uncertainty of being rewarded prevent our exertions; the testimony of a good conscience, and the blessings of eternity, will sufficiently repay us.

It is too true, however, that one of the greatest evils of life is the want of harmony and concord amongst the individuals of the human race. Even in this we may admire the wisdom of God, who notwithstanding the want of union, and the disorders which reign in the world, notwithstanding the universal self-interest which governs men, still supports society, and renders it flourishing. When a careful pilot steers his vessel in safety amidst the shoals and the rocks against which the waves strive to dash him, we admire his skill and experience; so when we see, in spite of the wickedness of men, in the midst of the storms and ebullitions of their passions, the dominion of wisdom and the preservation of virtue, we may admire and reverence the eternal wisdom of Him who governs the universe.

MAY XXX.

Prodigious Number of Plants upon the Earth.

MORE than twenty thousand different species of plants have been already observed, and new ones are daily discovered. By means of the microscope some have been found where they were least expected. The different varieties of mosses and sponges have been classed among vegetables, and have presented to the observation of the naturalist seeds and flowers before unknown. Freestone is sometimes covered with brown and blackish spots; the mouldy substance which composes them adheres to various other matters, and may be considered as a little garden in vegetation, where the plants, though exceedingly minute, have visible seeds and flowers. When we reflect upon the quantity of moss which covers even the hardest stones, the trunks of trees, and the most barren places; when we consider the quantity of vegetables upon the surface of the earth; the different species of flowers which delight and refresh us; the trees and bushes; add to these the aquatic plants, some of which exceed a hair in fineness; we may be able to form some idea of the multitude of plants in the vegetable kingdom.

All these species grow up and are preserved without detriment to one another, each having that place assigned it which is most suited to its properties. Such is the wisdom displayed in their distribution over the surface of the earth, that there is no part of it wholly destitute, and no part enjoys them in too great abundance. Some plants require the open field, where, unsheltered by trees, they may receive the sun's rays; others can only exist in water; some grow in the sand; others in marshes and fens, which are frequently covered with water; and some bud on the surface of the earth, whilst others unfold themselves in its bosom.

The different strata which compose the soil of the earth, as sand, clay, chalk, &c. have each their different vegetables; and hence it is that in the vast garden of nature nothing is absolutely sterile; from the finest sand to the flinty rock, from the torrid to the frozen zone, each soil and climate supports plants peculiar to itself.

Another circumstance highly worthy of attention is, the Creator has so ordered, that, among this immense variety of plants, those which are most proper for food or medicine, either to man or beast, grow in greater abundance than those which are of less utility. Herbs are much more numerous than trees and brambles; grass is in greater abundance than oaks; and cherry-trees more plentiful than apricots: had oaks been more frequent than grass, or trees than herbs and roots, it would have been impossible for animals to subsist. Almighty and merciful God, here also we have to acknowledge the wonders of Thy Providence! Thy goodness is every-where manifested, and there is no mind so weak that does not comprehend that Thou art all-great, all-powerful, and good! to be convinced of this we have only to contemplate the widely extended vegetable kingdom. Wherever we go at this season of the year, we walk on plants and flowers; and as far as we can extend our view we behold fields and meadows, covered with the rich blessings of heaven!

MAY XXXI.

Plurality of Worlds.

PRIDE, ignorance, or self-love, induce some people to believe that our world is the only part of the immense universe which is inhabited; that the sun is only formed to give us his light and heat; and that the moon and the stars answer no other purposes than to enlighten the gloom of our nights, and serve as guides to the mariner and the traveller. The contemplation of the fixed stars alone is sufficient to refute this absurd opinion. Their brilliancy demonstrates that they shine by their own light, and from their being visible to us, notwithstanding their immense distance, we are justified in supposing them to be much larger than our sun. And is it consonant with Divine Wisdom, which has not created a single particle of matter in vain, that these immense bodies, each in itself a sun, so numerous and so distant from our earth, should shine with ineffectual light, and not be destined to some great and noble end?

If they were merely intended to serve as nocturnal lights to our world they could be of no use during the greatest part of the year. The clouded atmosphere which often envelops us, and the short nights of summer, which are sufficiently light without the aid of stars, would render them useless; and those stars of which there are many which we cannot see with the naked eye, because of their vast distance, would exist in vain; and their supposed destination would be much better accomplished by one single star placed nearer to us, than by millions so distantly situated that their rays could not reach us. The same kind of reasoning will hold for whatever use we imagine the stars to be created; whether for the purposes of navigation, or any other use, we shall fall equally short of the truth, and must ultimately be brought to confess, that if no creatures beyond our globe profited by their light and heat, or if they themselves were not inhabited by living beings, their creation would be useless, and their existence superfluous. but the Almighty has created nothing that is not pregnant with utility; and if we can discover nothing, however insignificant, on this earth that does not answer some end, how much more must these immense bodies tend to manifest the power and glory of God!

This conclusion will appear still more just if we reflect attentively upon the solar system. We have seen in a former discourse that the moon in many respects resembles our earth; and from all that we have been able to discover of her, we have reason to believe she contains inhabitants. The analogy between the moon and the planets leads us to suppose they also are inhabited, and, as each fixed star has, according to all appearance, like our sun, its particular planets, so we may reasonably suppose they in some degree resemble the planets in our system; and thus we see around us an innumerable multitude of worlds, each having its peculiar arrangement, laws, productions, and inhabitants.

How infinite are the works of God! How majestic the starry heavens! and how great must be their Creator, whose glory millions of worlds declare, and whose all-intelligent power the myriads which inhabit them, adoring, acknowledge! Let us unite in the heavenly choir, that whilst incense from millions of worlds is ascending unto the God of all power, we alone may not be wanting in the universal song of joy, of praise, and of thanksgiving, to the great God of all, the Father of light and glory. How grandly does the prospect of futurity open upon our souls, when we shall become acquainted with the worlds whose existence we can now barely ascertain, and the least of whose wonders we are unable to comprehend! when we shall be initiated into all the mysteries of heaven, and admitted within the circle of that glory whose radiance emanates from the Creator!

Hymn of Thanksgiving.

Celebrate the praises of the Lord, and adore him. Exalt, praise, and sing the marvellous and wonderful works of your Creator, all ye whom he has made capable of enjoying them! For great is his power who has created the heaven and all its hosts, whose beauty and splendour announce the glory of the Parent of light and life; the universe declares it, and the eye is never weary with contemplating that in which it continually discovers new beauties. But the eye alone does not enjoy these pleasures; the beauties of nature speak to the soul, and fill it with rapture.

O man, is there a blade of grass, a leaf, or a grain of dust, which does not proclaim to thee, the council of the strong God? How rich is He in power and beneficence! but, alas! how often does He find thee insensible; thy heart is hardened, and thy eye turns away from his works! Yet for thee His creative hand has diffused life and beauty through all things; for thee He has created, preserved, and adorned so many different beings which thou beholdest in the garden of nature.

Thy God has need of nothing: it is for thy happiness that he has diversified the creation with so many charms, and that he has endued thee with an intelligent, immortal soul. Why then wilt thou seek happiness in that which is false and deceitful? Turn thine eye to thy *God*; *from* him thou wilt derive true felicity: enjoy the blessings which he gives thee, and repentance will never follow the enjoyment.

JUNE I.

Difference between the Works of Nature and of Art.

When we compare the works of nature with those of art, we find that the former infinitely surpass the latter. And when we consider that the works of art are merely imitations from nature, there can be no doubt entertained on the subject. The nearer an artist approaches to nature, the more perfect is his work; he can invent nothing that is new, and his most sanguine hopes are to imitate nature, which is rich and various, whilst the variety of art is soon at an end, and her resources quickly exhausted. The kingdom of nature is almost unlimited: we may everywhere find treasures inexhaustible, and stores without end; her minutest objects are worthy of observation, and whether we examine a stone, a plant, or an animal, we shall find that they contain beauties which captivate, and perfections which astonish. The works of art, on the contrary, are soon exhausted; if we scrutinise them with the eye of critical nicety, we discover faults which we did not expect, and imperfections which we did not imagine; our admiration ceases, and we turn from them without delight.

The works of art, and the proudest monuments of human skill, are mouldering in the dust, whilst those of nature continue in the vigour of youth and the freshness of beauty. The advantage of the latter in structure, over the former, is not less evident; whoever compares the mechanism of the most ingenious machine with that of animals, will be amazed with the one, whilst he considers the other as a mere bauble, or toy. To take the human body as an example: how wonderfully is it organised! The perfect and regular structure of the muscles, each one admirably adapted to its particular use; the circulation of the blood; the complicated variety of motions: the symmetry of the limbs, and the diversity of the functions; all display the most abundant proofs of the works of an Artificer, in comparison of which those of man are of less account than the dust in the balance.

It would be useless to weary the reader with more observations to prove a self-evident fact: for, though such is the depravity of human nature; that our self-love induces us to prefer our own productions to those of another; and the taste of some men is so vitiated that they are disposed to disregard, and consider with indifference, whatever is not produced by human industry and human ingenuity; few would be found so hardy as to expose their folly, and evince their total destitution of feeling, by asserting the puny efforts of art to be superior to the rolling of the billows, the cloud-capt mountains, and the smiling verdure of the valleys, together with all those stupendous and beautiful works that the ever-varying face of nature continually presents, the study of which yields delight and joy ineffable. Whilst it expands the mind, it renders the heart susceptible of all those feelings which raise the dignity of human nature, and advance it nearer to that Being who is the Source of all mercy and goodness; whom the more we contemplate the more we desire to imitate! and the more we imitate the more fitted we become for the blessed realms of peace, and the practice of every virtue.

JUNE 11.

Leaves of Trees.

LEAVES, the ornament of trees, are one of the chief beauties of nature. Our impatience to see them bud in the spring, and our joy when they appear, sufficiently declare how much we consider them the pride of our gardens, fields, and woods. What a grateful shade they form in the hot days of summer, when, retreating from the fervent rays of the sun, we repose on the banks of some clear stream beneath the overhanging trees! Yet this is the least of the advantages which the leaves of trees afford. We have only to consider their wonderful structure, to be convinced that they are formed to answer much more important purposes. Each leaf has certain vessels, which, being closely compressed at the extremity of the stalk, extend themselves like ribs on the interior part of the leaf, and ramify in various directions; and every leaf contains also an astonishing number of pores. In one species of box, called Palma Cereris, one hundred and seventy-two thousand pores have been enumerated on one side of the leaf. In the open air the leaves turn their upper surface towards the sky; and the under towards the earth, or the interior part of the plant. To what purpose could this particular arrangement conduce, if leaves had no other use than that of ornamenting trees, and affording an agreeable shade? Surely the Creator had something more important in view.

Leaves are instrumental to the nutrition of plants, by imbibing through their pores the humidity of the atmosphere, which they communicate to the whole plant. How admirable is the wisdom of their organisation! By its means, plants in dry seasons do not run the hazard of being deprived of moisture; they receive a plentiful supply of refreshing dew, which, falling upon the upper leaves, drops from them upon the lower ones, so that all receive a portion, and none of the invigorating juice is lost. It appears from various experiments, that plants perspire to a considerable amount, and the leaves have been ascertained to be the chief organs of this function. They also contribute to introduce into the interior of the plant the air of which it is in want, as well as to extricate that which it has used; and they tend to the preservation of the buds which are to bloom the following year; hence many trees, when stripped of their leaves, wither and die. This frequently happens to the mulberry tree, whose leaves are taken to feed silk-worms; and this is the reason why the grapes never arrive at maturity when the vine has been stripped of its leaves in summer.

We may make another remark upon this subject, which throws some light on the manner in which plants acquire their gradual growth. The inferior surface of leaves, which is turned towards the earth, is always of a paler colour and less shining appearance, and is more rough and spongy than the upper surface. This peculiarity enables it more effectually to imbibe the dew which exhales from the earth, and to distribute it with more facility and abundance to the whole plant. The leaves turn to that part whence they receive the most nourishment; hence we observe the leaves of certain plants hang very low. The leaves of trees which grow on a steep mountain take a perpendicular direction, by which they are able to acquire the necessary degree of humidity.

We have here fresh cause to admire the supreme wisdom of God, and we may henceforth consider the leaves of trees in another point of view. When we were ignorant of their structure, and of the important ends that they answered, it was not extraordinary that we saw them with indifference. But now that we know each leaf displays evident marks of Divine Power, and is an organ of fertility, it will be impossible to view them again with inattention or disregard; and whenever we see them we shall acknowledge that every thing, even the least object of nature, has been arranged by the wisdom of the Creator.*

JUNE III.

Vivifying Power of the Sun.

When first the sun awakens the morn, joy and serenity are diffused over the soul. The heat and brilliancy of the great luminary of day communicate to man the cheerfulness and activity by which he is enabled to fulfil the various duties of his vocation, and enjoy the endearments of social life. The indolence and mental depression which often during the winter rendered us incapable of action, are now dissipated: we feel more pleasure in our existence, and perform our duties with greater ease and comfort. How could it be otherwise, when we witness the universal joy that the sun communicates to the world, and when we see every thing around us affected by his all-vivyfying rays? He animates every creature, and rejoices them by his genial influence; millions of brilliant insects awaken and sport in his rays; the birds tune their music to his praises, and every thing which breathes rejoices at his appearance. Every where the joyful effects of his influence are felt: he causes the sap to rise in trees, plants, and vegetables; he unfolds the young leaves, and gives to the flowers their sweet charms; he forms the fruits, gives them their beautiful hue, and hastens their maturity. He diffuses light and life throughout the creation, and without him all nature would languish and die.

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* From the experiments of certain chemists it appears, that, during the day, the leaves of plants absorb carbonic acid gas, which is necessary for the nutrition and growth of plants, and they exhale moisture and oxygen gas; it is further proved by Senebier, that the oxygen gas emitted by the leaves of plants, depends on the presence of carbonic acid gas, which the leaves first absorb and afterwards decompose, and then give out the oxygen while they retain the carbon; these operations require the influence of light, which also is essential to the green colour of plants, for when they vegetate in the dark they are entirely white. During the night, leaves perform quite opposite functions; for they then absorb moisture and oxygen gas, and emit carbonic acid gas. Another very important function of leaves, is the power which they have of converting the sap into a different fluid; it is completely ascertained, that the sap ascends to the leaves, where it undergoes certain changes, and there becomes a fluid, which is instrumental in forming the different parts of plants, as the chyle converted into blood is in forming those of animals.

The influence of the sun is not only manifest upon the surface of the globe: it reaches the depths of caverns, penetrates mountains, is felt within the ocean, and produces various and important changes on animals, plants, and minerals, whether above or beneath the surface of the earth.

When we consider these salutary effects of the sun, it is natural to reflect upon the miserable state in which we should be if deprived of his light and heat. Without him our earth would be a sterile and lifeless mass, void of order or beauty; the trees could not unfold their leaves, nor the plants their flowers; the meadows would languish without verdure, and the fields without harvests; and all nature would present one wild aspect of sterile deformity. Such was the state of the moral world before the vivifying power of Christ diffused life and consolation over the hearts of men, and, by the purity and force of his light, dispelled the gloom of ignorance, and the shade of mental darkness, that held in bondage the soul.

The sun's vivifying rays emanating from him in all directions, may be considered as an emblem of the happy influence of a truly good man, who scatters joy and blessings on all around him. He strengtheneth the weak, cheereth the afflicted, instructeth the ignorant, and relieveth the poor. Such a being is a noble example of what virtue and human nature is capable: and may we each, according to our station and degree, endeavour to imitate such a character with full purpose of heart: it is in the power of each individual to become better, and the longer we refrain from iniquity, the more easy is the path to virtue. Let us each labour for our mutual improvement and impart to those who are in want a portion of the blessings which we are favoured to receive; our days will then glide on imperceptibly; our hearts, estranged from every sordid care and base passion, will be the seat of love, of peace, and of joyful harmony; and when our last hour shall arrive, we shall calmly repose in humble confidence on the bosom of our God, amid the prayers and blessings of thousands of our fellow-creatures.

JUNE IV.

Desires of the Soul unlimited.

LET us employ a few moments in reflecting on our own particular state; and certainly the consideration of our immortal soul has the first claim to our attention, as more nearly concerning us than any thing this world can afford. Whatever satisfaction we may feel in contemplating the objects of the material world, is infinitely short of that which we derive from meditating upon the nature and faculties of the soul. The contemplation of external objects which the traveller meets with on his way is doubtless highly pleasing, because he requires recreations and amusements in his pilgrimage; but by the contemplation of spiritual objects we are led to the consideration of the immortality of the soul, and the endless felicity of the righteous in the world to come. Let us often reflect upon the desires which are impressed on our souls. Experience convinces us that our desire for knowledge can never be satisfied; as soon as we have made one discovery, we thirst after more information, and, in proportion as our ignorance diminishes, we wish for more knowledge. Our desires are insatiate, and when we at length enjoy what we most ardently longed for, new wishes spring up, and the desire of receiving additional blessings accompanies us from infancy to the grave.

From all this we may infer, that, as no external object gratifies us long, as our desires never end with enjoyment, and nothing present is entirely satisfactory, but that we are continually looking for future blessings without ever being fully gratified, there is a state of existence beyond the present, the desire of which is so strongly implanted in our souls, that nothing short of it completely satisfies us. Can any one suppose that man should be the only creature upon the earth which possessed a faculty, without the power of obtaining the end for which that faculty was given him? or that man alone should possess an instinct whose instigations he could not satisfy? This indeed would render his condition more pitiable than that of the brutes; for when an animal of that description is hungry or thirsty, it finds aliment to supply its wants: we see the silk-worm spin its cone, and shut itself up within it till it comes forth a new creature; and we see birds lay eggs; but would these things happen if it were not designed for the preservation of their species? If then our existence was limited to the short span of this present life, why are implanted in our souls desires boundless as infinitude, and inclinations which nothing earthly can gratify? And why have we faculties which are ever grasping at something beyond their reach? Surely the great Author of nature has never given us such desires without some wise and noble end, much less has he endowed us with them that they may be our tormentors.

Gracious God! my soul feels Thy sweet influence, and loves Thee above all other things. It aspires to imitate Thy perfection, and unite itself unto Thee for ever; it can soar above all terrestrial objects, and continue its lofty flight till it reaches Thy throne. And can this soul, this principle of power and intelligence, the emanation of the Deity, ever be annihilated? Were that the case, vain would be our knowledge, and fruitless our love of God. For the utmost stretch of human attainment is very little; the highest degree of perfection which man can possibly acquire is very inferior, and infinitely short of what he conceives. Doubtless, then, all the excellence which we are permitted to possess upon the earth, and all the intelligence which we are enabled to attain, are but the fore-runners of that endless felicity the hope of which cheers every heart.

From these considerations we may learn something of our future destination. We now see that the desire of increasing in wisdom and virtue, and the wish of always approximating nearer to God, the Source of all perfection, are not accidental, or given us in vain; we now know, that the happiness which our imagination could anticipate but not enjoy in this state of being, will be the endless reward of the just; and we are now convinced, that those favoured moments in which the love of God warmed our hearts, when all the blessings of heaven opened before our view, and when we so ardently longed after perfection, were not useless, nor without efficacy. We are continually advancing towards perfection; and the more earnest and unremitting are our endeavours, the nearer shall we attain to it; no faculties of the soul are useless, and the more they are exercised the greater will be their powers. Let us then rejoice in our immortality, and ascend from what is visible to what is invisible. Let us in the midst of pleasure, when surrounded with all that this world can afford, when animated by hope, and in the enjoyment of every blessing which the most favoured children of humanity are permitted to receive, lift up our souls to heaven, and reflect upon the purity of God, that we may be preserved from the allurements of sense, and not debase our faculties by pursuits beneath the dignity of human nature, and incompatible with the sacred duties of Christianity.

JUNE V.

Utility of Rivers.

When we calculate the space which rivers occupy, we find that it takes up a considerable part of the earth. Let those who are discontented with this arrangement, and imagine that it would be more beneficial if the rivers had been fewer and the land more abundant, consider with what wisdom and beautiful proportion the Creator has formed the globe, and they [illegible] then doubtless be ready to acknowledge that the [illegible] have not been distributed upon the earth without the wisest views, and an evident utility to man, and every living creature.

First, we may observe, that river-water supplies a very wholesome beverage. Spring or pump water, when it has remained long under the earth without agitation, detaches and dissolves, or holds suspended, particles of matter which may be injurious to our system; but river-water, which is continually evaporating, and constantly undergoing agitation, refines itself from all impurities, and becomes the most salubrious drink for men and beasts.

This is far from being the only use of rivers; do we not owe to them the neatness, salubrity, and comfort, of our dwellings, as well as the fertility of our fields? Our habitations are always unhealthy when surrounded by marshes and stagnant waters, or when a drought is produced in consequence of the want of water. The smallest river is refreshing, and cools the air; whilst the earth is rendered more fertile. What an astonishing difference is observed between a country watered by various streams, and one to which nature has denied this blessing! The one is dry, barren, and desert; the other flourishes like a garden, where woods, valleys, meadows, and fields, present every variety of beauty. A river meandering through a country, carries with it refreshment, abundance, and prosperity; and not only irrigates the roots of plants, but fertilises the earth by frequent inundations and continual evaporation.

Surely then no one can be so inattentive and ungrateful, as not to acknowledge the advantage of rivers, seeing that they are the source of such numerous blessings. If by means of rivers, merchandise could not be floated through every part of a kingdom, commerce would be impeded; without their assistance the machinery of numerous manufactories would be stopped, agriculture would suffer, and the tables of the luxurious would be deprived of many of their delicacies. The only inconvenience of rivers is their being sometimes subject to inundations, which occasion very considerable damage: but this, compared with their many advantages, is trifling; inundations do not happen very often; they seldom extend far: and whatever temporary losses they may occasion, they amply indemnify by enriching and fertilising the land. Thus the consideration of rivers will convince the attentive observer, that the Divine Goodness is manifested through all nature, in the ocean, and in the rivers of water, equally as upon the solid earth. We find every thing conduces to our happiness and advantage; and if we were deprived of any one of the blessings we now enjoy, part of our comfort and felicity would be taken away.

JUNE VI.

Diversity of Flowers.

When we consider the prodigious number of flowers produced in the spring, summer, and autumn, we cannot but be astonished; and their variety is not less remarkable: to produce so great a number required the agency of a Divine Power, and to effect such a diversity demanded that power to be exercised with a wisdom equally admirable. If they bore an exa[illegible]esemblance to each other in their structure, form, dimension, and colours, we should be wearied with their uniform fineness; if the summer produced no other plant and flowers than such as we had already enjoyed in the spring, we should soon be tired of viewing them, and we should neglect their culture.

It may therefore be regarded as a proof of the Divine Goodness, that the productions of the vegetable kingdom are so pleasingly diversified, and that a variety of new charms is continually added to their perfections. This diversity not only takes place in the different classes and genera of plants, but may be observed in each individual: thus, the genus of the carnation differs in appearance from that of the rose, the rose from the tulip, and the tulip from the auricula; and each individual rose, tulip, or carnation, has its peculiar character displayed in its structure, size, or beauty—we can scarcely select two flowers that are precisely similar in every respect, each one having peculiar beauties, though both are individuals of the same plant.

If we examine a flower-bed, we shall find some of the flowers of an extraordinary height, towering above the rest; others are of a middling size; and some just raise their heads above the earth. Some have the richest and most brilliant colours: others are more simple and plain: some perfume the air with the most exquisite fragrance; whilst others only please by the beauty of their tints or the delicacy of their form. The variations in flowers are not less remarkable in the different seasons of the year: thus, in spring, when men leave the close confinement of towns to enjoy the charms of the country, the blossoms are seen in full bloom and beauty; as summer advances thousands of flowers offer themselves to the admiring spectator, and one species succeeds another in a regular and defined order. When at length winter arrives, it brings with it other plants, which, though they may not be so pleasing to the eye, are not the less useful. Amongst vegetables there is still more variety. What a diversity, and how many links are observed, between the weeds which grow amongst stones, and the blade of corn! In plants whose nature it is to creep, what a difference between the ivy, which clings to the mouldering monuments of magnificence, and the succulent vine, whose grapes refresh us as fruit, and invigorate us as a beverage!

Thus every thing is planted in wisdom, and produced in perfection; every where the useful blends with the agreeable, and the infinite goodness of God is manifested throughout the creation.

JUNE VII.

Use of venomous Animals and Plants.

Every production of the earth, considered separately, is good and wholesome: and if any thing is found to be noxious, it is because we do not make a proper use of it. Hence it is, that the food which preserves the life of one animal, occasions the death of another; and the same plant which in certain circumstances is regarded as poisonous, in others is highly useful and salutary. Hemlock, for example, was formerly considered as a deadly poison; but it is now employed in many cases as a medicine with considerable success, and without producing any bad consequences. The number and variety of vegetables growing upon the earth is prodigious; we must not, however, imagine they were all created for the use of man; some are designed for beasts, some to exhale grateful odours, and others are useful in many of the diseases to which the animal economy is subjected.

The same thing holds good with regard to many living creatures, which, though very dangerous to man, are useful to other animals, as affording food or medicaments. Many birds feed upon insects which are considered as noxious: domestic fowls are fond of spiders; peacocks and storks will feed upon serpents. Some of the most efficacious medicines are composed of the most poisonous herbs. The number of plants and animals of a poisonous or venomous nature is very inconsiderable, compared with those which are evidently useful and beneficial; and both men and animals have a natural repugnancy and aversion for every thing which is hurtful or prejudicial to their nature. Mischievous animals have a certain dread of man, which prevents their attacking him unless they are excited to it by provocation or necessity; and the most hurtful species of animals have generally some distinguishing characteristics by which their dangerous properties may be known and guarded against. The rattle-snake, the most dangerous of serpents, makes known his approach by the rattling noise of his tail. The crocodile is so clumsy in his motions, and turns round with so much difficulty, that it is easy to escape from him. Divine Goodness, moreover, has so ordered, that the most dangerous and venomous animals furnish the antidote for their own poison: thus, the oil procured from a scorpion is an infallible remedy against its sting; a bee, bruised and rubbed on the part it has stung, assuages the pain; and the fat of vipers is an excellent remedy for their bite.

Perhaps it will be urged, that it would be better if no plant or animal had been created with the power of injuring living creatures. Such a suggestion can arise only from ignorance; for, if the Author of Nature has formed creatures with the power of injuring one another, it is for the wisest purposes, and from such an arrangement many advantages result. Several creatures which appear to be noxious, are only so in certain respects; their poison, and the organs which enable them to inflict wounds, are absolutely necessary. One illustration of this will be sufficient for our present purpose: the bee often causes very great pain by his sting, but deprive him of that, and he is useless; and so it is throughout the unlimited field of nature, that which appears to be noxious is indispensably useful. Why then has man the presumption to determine upon what is useful or prejudicial in nature? or who can assert that it is contrary to the wisdom of God that we should suffer pain? Do not the most unpleasant things often procure us the greatest advantages? In general it will be found that natural things are only accidentally hurtful; and if we ever receive any injury from them, we may almost always attribute it to our own imprudence and neglect.

JUNE VIII.

Odour of Flowers.

A PROFUSION of beautiful objects every where surrounds us; every thing that we see and hear, all the sensations of smell and taste, contribute to our delights and multiply our gratifications. All nature seems to combine in these happy days to fill our souls with rapture, and raise our hearts to the Deity, from whom flows every joy, and of whose goodness every flower is a consoling proof.

At present, let us confine our attention to the pleasure we derive from the agreeable and varied fragrance of flowers. The goodness of God would have been amply displayed in the creation of flowers alone, which so much delight by their beautiful variety; but he has done more, he has given to the fairest of nature's productions the most grateful fragrance. The scents of flowers are not less exquisite and various than their different shades of colouring; and though it is not easy to determine in what this difference of odour consists, it is very perceptible upon passing from one flower to another. It may be also observed, that their smell is neither potent enough to affect the head, nor so weak as to prevent its pleasing influence.

The particles which are continually exhaling from flowers are so light and subtle, that they are easily wafted to a great distance: the perfume which arises from a single grain of amber will scent a very large room; and the smell of the rosemary growing in Provence is perceptible at sea at the distance of twenty miles.

The cause of these exhalations so readily affecting the organs of smell, must be attributed to the structure of the nose, which is composed of a cavity formed by bones and cartilages, and is separated into two cavities called nostrils, by a partition, the upper part of which is bony, the lower cartilaginous: the superior part of this cavity communicates with the mouth, and it is lined with a membrane upon which is a very fine expansion of nerves, proceeding from the brain through the os cribriforme or sieve-like bone, so called from its numerous perforations. The odours floating in the air are readily received into the nostrils, and impress the exquisitely sensible membrane with the sensation of smell.

In this structure we may particularly remark the wisdom of the Creator displayed in the formation of the bony plates which terminate the upper part of the nose, and have a twofold use: they prevent injurious substances from entering the passages of respiration whilst we sleep, or are incapable of guarding against them; and they receive the ramifications of the olfactory nerves, numerous branches and filaments of which are dispersed over these lamina, and thus receive the odoriferous particles which enter the nose along with the air. Let us then rejoice and be thankful for this most gracious gift of our heavenly Father; a gift which procures us the most delightful sensations, and without which nature would lose half her charms. In our walks through the garden, whilst we are gratified with the fragrance of a thousand flowers, let us lift up our hearts in gratitude to that Being who has graciously bestowed upon us these sweet productions of nature.

JUNE IX.

Multitude of Animals.

Naturalists have calculated that the number of animals upon our globe amounts to about four hundred thousand species. It is supposed, that in the known parts of the earth there are more than four hundred and fifty species of land animals; of birds, six hundred; of fish with scales, two thousand; of shell-fish, three thousand; and of insects distinguishable by the naked eye, upwards of twenty thousand species; besides those which belong to different kinds of animals, amounting to nearly one hundred thousand species. And there are immense tribes of insects entirely unknown to us, the number of which may be estimated at two hundred thousand. We must also take account of those which live upon plants; and eighteen thousand varieties of plants having already been described, if we only allow each to contain four species of insects, the number of these will amount to seventy-two thousand.

This estimate of the number of animals living on our globe, will doubtless appear prodigious; but if we believe with some naturalists that the whole kingdom of nature is every-where animated, and filled with beings, we shall not find it too great. Some physicians have maintained that the diseases which are accompanied with eruptions and pustules, as well as some species of fever, are occasioned by little insects; and it is probable that the atmosphere is sometimes peopled with insects, though their extreme minuteness renders it impossible to detect their presence If we examine any flower, as a rose or a daisy, we shall discover a multitude of insects, and the smallest portion of the earth teems with life: animals are even contained in each other. The air, the juices of plants and animals, putrid substances, excrementitious matter, smoke, dry wood, and even the hardest stones, serve as habitations for living creatures.

The sea also seems to be an element composed of animals. The light which is sometimes observed upon it in a summer night, is owing to a multitude of small luminous worms, the particles of which, detached from the body and become putrid, float on the water, and continue to shine as when the animal was alive. Innumerable animalculæ sport in the rays of the sun; and all these little being are infinitely diversified in their figure, organs, and motions. Such is the number and variety of the beings which inhabit this globe. Let us attempt to name all these animals, to enumerate the only individuals of a single species; or endeavour to calculate the number of herrings, flies, worms, birds, &c. and we shall find ourselves utterly unable to perform what it would be impossible to express by numbers.

Here we have abundant cause to admire the infinite power of the Creator, who alone has produced all these creatures, and who still continues to support and to preserve them. Consider the food these various tribes of animals require; if they only lived by destroying one another, nature would every where present scenes of cruelty and slaughter. But fortunately, the number of carnivorous animals is few; and these are useful in devouring the carcasses that, lying about and becoming putrid, would infect the air. The vegetable kingdom, however, is more properly designed for the nourishment of animals; and almost every species has some particular kind of plant which it makes choice of: and that every species of animals may have food proportionate to their nature, they are distributed in different countries of the earth. And how beautiful is the arrangement of nature! One tree is larger than many thousand plants, and yet it occupies only the space of a few feet in the earth; and many animals, birds, and insects, find in it their abode and nutriment.

How merciful are the cares of Providence for animals, in surrounding them with a fluid suited to their respective natures! And will the atheist dare to say that there is no God? Senseless man; "Go and ask of the beasts, and they will teach thee; of the fowls of the air, and they will tell thee: speak to the reptiles of the earth and they will inform thee; unto the fishes of the sea, and they will declare unto thee the ways of the everlasting God. Who knoweth not in all these that the hand of the Lord hath wrought this? In whose hand is the soul of every living thing, and the breath of all mankind."

JUNE X.

Immensity of the Firmament.

APPROACH, O man! and contemplate the firmament: regard those vast bodies which nightly illumine the heavens; endeavour to count them, and thy sight will be confused, whilst thy eyes survey the infinite multitude of stars. Call to thy assistance the powers of the telescope, and millions of new worlds will present themselves to thy view, continue thy observations, and attempt to number these luminaries; thy ideas will be confounded, and thou wilt be convinced that no known numbers can express the multitude of all the stars which bespangle the firmament.

It is true that at a very early period men began to turn their attention to the stars, and to ascertain their numbers; but since the invention of telescopes new discoveries have proved the imperfection of former calculations, and shown the difficulty, if not impossibility, of our gaining a certain knowledge of this important subject. To count the stars seems to be an enterprise as impracticable as that of numbering the grains of sand on the sea shore.

The invention of telescopes has enabled us to obtain much more information than we otherwise could have done; but the most exact observations made through their means tend to convince us that our powers are too limited to discover all the heavenly bodies. One of the most ancient astronomers enumerated only one thousand and twenty-six stars, and this catalogue was afterwards increased to one thousand and eighty-eight. The number is now considerably augmented: by means of instruments, we learn that the long and luminous tract seen in the heavens, and called the Milky Way, is composed of innumerable stars; and we also know that where but a single star was formerly seen, by the assistance of a telescope we now discover many, and two constellations alone display more stars than were before observed in the whole heavens.

Such considerations as these enlarge our ideas of the universe. And if our admiration of the immensity of the Divine Power be increased by these discoveries, how much greater will it be, when we consider the magnitude of those stars, which, notwithstanding their prodigious distance, are perceptible by the naked eye. The most exact and indubitable calculations inform us, that a cannon-ball, shot off from the nearest fixed star, would fly seven hundred thousand years before it reached our globe.*

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* The distance from us to the nearest fixed star is computed

Some of these globes, being nearer to us, appear larger than the rest, and are on that account called stars of the first magnitude; the next to these are called stars of the second magnitude, because, being at a greater distance, their magnitude appears less. The next to them in lustre are of the third magnitude, and so on to the sixth, the smallest visible to the naked eye.

Creator of Heaven, and sovereign ruler of worlds! Father of angels and of men! how my soul loves to stretch forth her pinions, and wing her imaginary flight beyond the confines of mortality, unto the regions of day, where, for a space, forgetting the cares and vexations of an anxious existence, she contemplates with rapture Thee, the Author of light, and wishes that her faculties were vast as the extent of heaven, and unlimited as the regions of space, that she might comprehend Thy sublimity, and raise her thoughts from those innumerable worlds, the offspring of Thy power, unto Thee, the sanctuary of grace and the source of glory! But whilst we are travelling through Life's uncertain path, such desires cannot be realised; we cannot comprehend Infinity; and these aspirations of a noble and exalted soul are obliged to yield to our imperfect nature: but they strongly evince the soul's ethereal essence, and lead us to expect the joyful moment when, delivered from her present bondage, all her faculties will expand, and she will in one instant know what the united intellect of centuries could never discover.

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at 32,000,000,000,000 of miles, being farther than a cannon-ball would fly in seven millions of years.

JUNE XI.

Peculiarities in the Vegetable Kingdom.

The difference between animals and vegetables is so great, that on a superficial view we do not perceive any resemblance between them. Some animals only live in water; others on the earth, or in the air; and some are amphibious, or capable of living either on land or in water. And this is literally the case with vegetables: some of them only grow upon land, others in the water; some can scarcely bear any moisture; others live either in earth or in water; and some even are found that exist in the air. There is a tree in the island of Japan, which contrary to the nature of all other trees, to which moisture is necessary, cannot bear wet. As soon as it is watered it perishes; the only way to preserve it in such a case, is to cut it off by the root, which is to be dried in the sun, and afterwards planted in a dry and sandy soil. A peculiar species of mushroom, some mosses, and other small plants, float in the air; but what is still more extraordinary, a branch of rosemary, which, as is the custom of some countries, was put in the hand of a corpse, sprouted out to the right and left so vigorously, that after a lapse of some years the grave being opened, the face of the defunct was overshadowed with rosemary leaves.

The vegetation of the truffle is still more singular: this extraordinary tubercle has neither roots, stem, leaves, flowers, nor seeds; it derives its nourishment through the pores of its bark. But it may be asked, how is it produced? Why is there commonly no kind of herb in the places where this species of mushroom grows? and why is the land there dry and full of crevices? These things have never been explained.

No plant so much resembles animals, as that species of membraneous moss called nostoch: it is an irregular substance of a pale green colour, and somewhat transparent; it trembles upon the slightest touch, and easily breaks. It can only be seen after rain, and is then found in many places, particularly in uncultivated soils and sandy roads.

It exists in all seasons, even in winter: but is never so abundant as after rain in summer. The most remarkable circumstance about it is its speedy growth, being formed almost instantaneously; for sometimes if we walk in the garden in summer, not a trace of it is seen; when a sudden shower of rain falling, if the same place is visited in an hour, the walks are entirely covered with it. The nostoch was long supposed to have descended from the sky; but it is now known to be a leaf, which attracts and imbibes water with great avidity. This leaf, to which no root appears to belong, is in its natural state when impregnated with water; but a strong wind or great heat soon dissipating the water, the leaf contracts, and loses its colour and transparency: hence it appears to grow so suddenly, and to be so miraculously produced by a shower of rain; for when the rain falls upon it in its dried and imperceptible state, it becomes reanimated, and appears a fresh production.

We might readily enlarge the list of plants which bear a resemblance to animals; but there are other peculiarities in vegetables which solicit our attention. The whole atmosphere is pregnant with plants and invisible seeds, and even the largest grains are dispersed by the wind over the earth; and as soon as they are transported to the places proper for them to germinate in, they become plants, and often so little soil is necessary for this purpose, that we can scarcely conceive whence they derive the necessary degree of nourishment. There are plants, and even trees, which take root and grow in the clefts of rocks without any soil whatever.

Vegetation is sometimes very rapid; of which we have instances in mushrooms, and the common cresses, the seed of which, if put into a wet cloth, will be fit for a sallad in twenty-four hours. There are plants that exist with scarcely any perceptible vitality. We often see willows, which are not only hollow and decayed within, but their external bark is so much injured that very little of it remains; yet from these seemingly sapless trunks buds sprout in the spring, and they are crowned with leaves and branches. It is truly wonderful that plants should not only imbibe nutriment by their roots, but that their leaves also should assist in this important function, by inspiring air; and an inverted tree will flourish, as well as when in its proper position; for the branches will grow in the earth and become roots.

The advanced age that some trees attain to, is also very remarkable. Some apple trees are above a thousand years old; and if we calculate the amount of the annual produce of such a tree for the above space of time, we shall find that a single pippin might supply all Europe with trees and fruit. So extensive is this subject, that to follow it through all its ramifications would lead us on much too far for our present limits. All nature teems with wonders; every thing leads to an infinitely perfect Being, whose power, united to boundless wisdom and goodness, is continually acting for our benefit, and daily giving us fresh cause for gratitude and admiration.

How great and magnificent are Thy works, O Lord! What wonders crowd upon my mind! I view them with rapture, and am lost in the contemplation; they surpass my comprehension, I cannot fathom them. At thy command the grass shoots forth its green blade, and the woods are clothed with verdure; the flowers adorn the fields and beautify the gardens with their glowing colours; the tree lifts its tall head to the clouds, and the mountain cedar declares Thy glory! Wherever I turn my view, new wonders delight me: the meadows, the mountains and the valleys, the rivers, the seas, and all, from the least atom to the distant spheres in the heavens, declare Thy goodness and display Thy glory!

JUNE XII.

Means of Happiness derived from Nature.

We have only to consider the bond and connection existing between man and all natural productions, to be convinced that every thing throughout nature tends to his utility. For though there are many bodies whose use with respect to man we do not readily perceive, it is not reasonable to conclude that we derive no advantage from them. Many things, which in the days of our forefathers were considered as useless, are now regarded as benefits; and we may justly presume that our posterity will discover many things to be useful, of whose nature we are now ignorant. In this we may acknowledge the Divine Wisdom, which has concealed from us the true use of many creatures, that we may be more humble by feeling the limits of our knowledge, and that our faculties may be continually exercised and improved by contemplating the works of the creation. Many productions of nature are only indirectly useful; for as some animals serve for nourishment to man, consequently whatever tends to their support must be useful to us. We find that many creatures are conducive to the nourishment of others; small fish are the food of larger; many birds feed on worms and insects; and there are many species which live entirely by prey. Here again the Divine Wisdom is manifested; for if the produce of the fields formed the sole nourishment of animals, there would not be a sufficiency left for the support of man.

There are some animals, as those of a venomous nature, which certainly are hurtful to man; and there are some poisons so powerful as instantaneously to kill; on which accounts, many creatures are regarded in a very disadvantageous light; yet, if we consider them more attentively, we shall discover traces of the goodness of God, and have cause to admire his wisdom. Physicians make use of many excellent remedies in the composition of which are substances of a poisonous nature. And can we suppose that man would be more happy if there were no venomous animals upon the earth? The poison that they bear is in part derived from malignant vapours, which man could not have respired without injury; and, in short, we may say with confidence, that there is nothing upon earth really injurious to him, unless he makes an improper use of it.

But if in the formation of the globe God had our happiness in view, are we not inexcusable in counteracting his gracious designs, by putting obstacles to our own felicity, instead of contributing to promote it by our most earnest endeavours? God's designs towards us are merciful, but we often render them ineffectual by a mode of conduct which necessarily makes us unhappy. Let us henceforth be wiser, and better profit by those various means of happiness with which it has pleased a gracious God to supply us so abundantly in the kingdom of nature; and as our desires are not completely satisfied by any thing this world can afford, let us look up to Heaven, the source of all good, and we shall feel our minds enlarged by the influence of a pure religion, which will teach us things of which we were before ignorant, and point out the true path to endless felicity!

JUNE XIII.

The Magnet.

Of all the bodies in the mineral kingdom, the magnet, or loadstone, has the most striking properties. It is an iron ore of a dark grey colour, and has the property of attracting iron. This power of attraction resides chiefly in the two extremities of the magnet which are termed its poles: and when it is free and suspended by a string, it constantly directs one pole to the north and the other to the south. This effect is invariably produced, however the stone may be moved, if it is at last left to itself.

This constant and uniform direction of the magnet, which only varies in some particular parts of the globe, has given rise to that extremity of it which points to the south being called the south pole, and the opposite extremity the north pole, of the loadstone. It communicates to iron polarity, and the power of attracting steel. This discovery introduced the magnetic needle, so necessary to navigators: hence we find that many things which at first seemed to be of no importance, may become highly useful to the world; and the more we extend our knowledge of nature, and study the magnificence of the creation, the more will our intelligence be amplified, our understanding enlarged, and our means of felicity increased.

These virtues of the magnet induced naturalists to examine it more closely, that they might be enabled to penetrate into the cause of such surprising effects, as well as discover new properties in the stone; in which last endeavour they were more fortunate than in the former. They found that the magnet did not always, nor in all places, point alike to the north; but that it inclines one while towards the east, and at another towards the west: they also remarked, that its attractive power acted as strongly when they interposed any other body between it and the iron. All metals, iron excepted, wood, glass, fire, water, and animal bodies, give a free passage to the magnetic fluid, and do not prevent its acting upon iron. They discovered that the north pole of one magnet attracts the south pole of the other, and that the north pole of one repels the north pole of the other, and the south poles applied together also repel each other. It was supposed that the attractive power resides in the iron as well as in the magnet, since the attraction seems to be mutual. To prove this, we have only to suspend a magnet at one end of the beam of a balance, and attach to the other extremity a weight equal to that of the magnet; when the balance is made perfectly equal, place a piece of iron beneath it, and the magnet, attracted by the iron, will descend. The same thing will happen if the iron is attached to the beam and the magnet be placed beneath.

However singular these phenomena may appear, there is another circumstance respecting the magnet not less deserving our attention: which is, that all the skill, the sagacity, and efforts of philosophers, have not succeeded in discovering the cause of these astonishing effects; notwithstanding all their labours, the magnet still continues to perplex the learned, and excite the desires of the curious to unravel its mysteries. If then in natural productions there are many things which the human intellect cannot comprehend or explain, how much more must there be in religion, which is elevated so far above all the objects of our senses? There are mysteries, the explanation of which we cannot obtain in this finite state of existence, and the perfect knowledge of which is reserved for a future world. And can it be surprising that there are things in religion beyond the reach of our understanding, when there are natural productions which daily attract our attention, whose properties defy the united powers of the learned to explain? There are, however, men who have the presumption and the folly to doubt, and even to deny, all that they cannot understand of religion. If this was a just method of proceeding, it would be equally rational to doubt or to deny that the magnet attracts iron, or possesses polarity; and to assert that all that is related of it is false: for we cannot explain or comprehend the cause of the effects it produces.

When the existence of natural objects is disputed, we have only to say unto the sceptic, Come and see: but the mysteries of religion are not so easily penetrated; they are hidden from the foolishly wise, and are revealed unto babes; they are seen only with a spiritual eye, and their perfect comprehension is reserved for a more pure and exalted state of existence. When we meet with difficulties, and things which we cannot comprehend, whether in the ample volume of nature or in the pages of religion, let us not be impatient, but bow with resignation to the will of all-ruling Heaven; remembering that however confined are our faculties and humble our intellectual attainments in this life, we are graciously favoured to hope and believe that a great portion of our felicity in a future world will be in that expansion of soul by which it will be enabled to know all that is now concealed from it, and approach in its nature nearer to its Almighty Creator.

JUNE XIV.

Cherries.

The cherry is a fruit, which, by its sweetness blended with a pleasing acidity, quenches the thirst, allays the heat of the blood in summer, and prevents many disagreeable effects, which a hot season might produce in our system. They quench the thirst by their sharpness causing the salivary glands to contract, they cool the parched tongue, and moisten the dry palate. This mode of allaying thirst during hot weather is much preferable to drinking a large quantity of liquid, which distends the stomach and tends to increase the heat and perspiration. Besides the cherries thus pleasantly appeasing our thirst, they possess a cooling property, which tempers the heat of the blood; and thus prevents the debilitating effects of the nerves being continually stimulated. Thus the beneficial juice of cherries, by its acidity and astringent virtue, refreshes us during fervent heats, purifies the blood, and preserves the fluids from putrefaction.

How mercifully has the Creator provided us with fruits adapted to each season! During the hot months we require cooling and acid fruits; and we receive them in abundance, both salutary and agreeable, conducing to our nourishment whilst they gratify our taste. We possess them so plentifully, that the poor can enjoy them as well as the rich. Let us make this consoling reflection, whenever we see a cherry-tree laden with fruit. How sorrowful would be the fate of the labourer who gains his daily bread with the sweat of his brow, if he had no other means of cooling himself than the delicious beverages which the affluent only can procure! Merciful Father! Thou art mindful of the indigent; thou providest for his wants, and condescendest to refresh him with fruits which thy kind Providence has placed within his reach; and cherries are more wholesome and refreshing to the weary labourer than lemonade and the most sparkling wines to the rich. We have great cause to be thankful for the abundance of acid and cooling fruits this season affords; gooseberries, currants, cucumbers, stone-fruits, sallad, &c. are so many agreeable preservatives of the health.

Whenever we enjoy the sweets of cherries, let us consider them as blessings from heaven, and acknowledge the goodness of our Creator. The heavens, the earth, the elements, and every living creature, contribute to our happiness; wherever we turn our eyes they meet the blessings of our heavenly Father, which every-where surround us. Animals, corn, vegetables, and fruit, in the valleys and upon the mountains, in the forests and in the seas, all serve for our pleasure and support. The all-beneficent hand of the Most High is continually open to us, and his blessings are for ever showering down from Heaven. When we walk abroad in the fields or in the garden, when we enjoy the beauties and the blessings of nature, let us think of him, the Source of every delight and of every pleasure.

vided with strong talons and sharp hooked beaks, that they may more readily seize and hold their prey. Those which are obliged to seek their nourishment in marshy places require a long slender bill, and long legs; and those which live in water should have the lower parts of their bodies large, a long neck, membranes like webs, connecting their claws, enabling them to act as oars, and a kind of oil upon their feathers to render them smooth.

Insects which live upon prey have a mouth formed like pincers or claws, and those which live by suction are provided with a string or proboscis. The eyes of hares and rabbits are large and project a considerable way from the head, that they may easily discover and avoid the dangers and snares to which they are exposed: and the eyes of the mole are small and sunk deep in the head, because being destined to live chiefly under ground, little light was requisite, and prominent eyes would have much impeded it in the operation of burrowing.

The crystalline humour in the eyes of fish is spherical, to remedy the inconvenience which would arise from the refraction of the rays of light in an aqueous medium; while animals which live in the air have the crystalline lenticular, or planoconvex. Why have animals whose eyes are moveable only two, whilst those animals whose eyes are fixed have several? Why is the pupil of animals which seek their prey in the night, large and brilliant? And why does the eye of the hen answer both the purpose of a telescope and microscope, if not to enable her to see the smallest seeds in the earth and among gravel, and that she may discover at a distance the birds of prey which threaten to seize her young?

How astonishing is that vast assemblage of organs by which animals perform their different motions! What a multitude of limbs! What pliability and activity! What numerous muscles, nerves, bones, and cartilages, every motion puts in action! Some animals move slowly, others swiftly; some have two feet, others more; some have both wings and feet, others neither. The quickness or slowness with which each animal moves is regulated according to its necessities. Those which are well armed, which have courage, force, and skill to defend themselves against their enemies, move more slowly than those which are destitute of these properties. Who has given to serpents and other reptiles the power of contracting and extending their bodies, of coiling themselves into a circle, and of darting upon their prey? Who has so constructed the fish that by means of their bladder they can at pleasure ascend or descend in the water? Who has taught the snail to contract its body, and cause water to enter into its little habitation when it wishes to fall to the ground?

How skilful is the structure of birds, particularly their wings; and how well their body is adapted for flight! small and sharp before, and gradually increasing till they have acquired their proper size, they readily cut the yielding air, and are less impeded in their passage through that element. The feathers are all arranged with much art, lying one upon another in regular order, by which they facilitate the motion of the body, and at the same time serve it for a covering and a defence against stormy weather and the severity of winter. Though close and strongly joined together, they are capable of extending and erecting themselves; of swelling out and forming a larger volume, according as the necessities of the bird may require. The wings, which are the great instruments of flight, are placed in the most convenient part for keeping the body exactly balanced in so subtle a fluid as the air. How admirable is the construction of each single feather! The quill is stiff, and hollow towards the lower extremity, which renders it both light and strong. The beard of feathers is arranged with regularity, broad on one side and narrow on the other; which is particularly useful in the progressive motion of birds, as well as in the strong and close texture of the wings. The feathers are also placed in the most exact proportion, so that each accords with the length and strength of those next to it; and the larger support the smaller. In the bony parts of the wings there are numerous joints which open and shut, or move as necessity requires, whether to extend the wings or bring them closer to the body. The pectoral muscles are formed with much strength, to enable the bird to pass through the air with greater rapidity. The tail is so admirably constructed that it serves as a helm to direct the flight, and assist the bird in rising and descending in the air, whilst it keeps the body and wings in a steady position. The legs and feet are equally appropriate to their different motions; in some birds the claws are large, and provided with membranes which extend and contract, to enable them to swim; in others the claws are sharp, and crooked at the points, that they may tread more firmly, perch, seize, and hold their prey; in some the legs are long, that they may walk into water, and rake up their food from wet and marshy places.

In all this we must see and acknowledge the supreme intelligence of our Creator and merciful Benefactor. Is it possible that things so wonderful, regular, and admirably proportioned, can be the effect of chance? Or can any one be so weak as to imagine it was without design that all this series of vessels, of muscles, of joints, &c. &c. in each animal, were put in motion: and that every part, even the most minute, should bear so strict a relation to others, and all fulfil their different functions with such perfect harmony and regularity? It ought rather to excite in our minds the idea of some great First Cause of all, which is the Creator of the heavens and the earth; whose wisdom and goodness have formed all these creatures, and given that structure which is best adapted to their nature and situation. Let the presence of these objects then lead us to glorify and adore the Almighty; let us seek for that living wisdom which will teach us more and more of his ways, that we may become better and more intimately acquainted with that Being who has so gloriously manifested himself throughout the creation.

JUNE XVI.

Dew

The wise Governor of nature who continually watches over his children, and provides for all their wants, makes use of various means to render the earth fertile. Sometimes he effects this by inundations, which, though they may lay waste the fields, and excite the murmurs of those short-sighted men who only consider present evils, produce in the end the most beneficial consequences to the country in general. Sometimes they proceed from a vast river, which, like the Nile, at stated periods issues from its bed, to water a country and refresh the parched fields, where showers never fall; and at other times they are caused by heavy rains which descend more or less frequently to cool the air, to moderate the heats of summer, and to irrigate the dry earth. But these means are neither sufficiently constant nor abundant; the most usual, certain, and universal, but that which perhaps is the least valued and regarded, is the Dew. This blessed gift of heaven, which even in years of the greatest drought preserves and supports vegetation, consists in those pure and brilliant drops that every morning and evening are seen collected in considerable quantities upon the leaves of trees and plants.

Dew does not descend from above, from regions more elevated than our atmosphere, as was formerly imagined; neither is it an exhalation from the heavenly bodies, as some have supposed. This pretended celestial origin occasioned that absurd notice of alchymists, which induced them to expect the formation of gold from the drops of dew. At present it is generally understood that dew is nothing more than a vapour, which during the warmth of day exhales from the earth and vegetable productions, and, condensed by the coldness of the night, falls in drops. To be convinced of this, we have merely to cover a plant with a bell-glass, and we shall observe a greater quantity of moisture collected upon its leaves than upon those which are exposed to the open air. This certainly could not happen if the dew descended from above, or if it did not arise from the earth. Nothing is more easy than to account for its formation; for no one can be ignorant that the rays of the sun, and the heat diffused over the surface of the earth, continually cause to exhale from different bodies a multitude of subtle particles, some of which ascend into the atmosphere, and others collect in form of aqueous drops. This explanation of dew accounts for its being sometimes prejudical, and at others not so; its nature considerably depends upon the properties of the vapours of which it is composed. The wind carries off the very subtle exhalations as soon as they are extricated, and thus prevents their forming in drops, hence it happens that the dew is most abundant when the air is calm.

By this wise provision of nature, plants are enabled to grow and increase in countries where it never rains; for the soil in those countries being sandy, porous, and very moist beneath, by means of heat, a copious supply of dew is effected, which surrounds the plants, and affords them nutriment. These different means which Divine Providence uses to moisten and fertilise the earth, should recall to our minds those which he uses to ameliorate the hearts of men, and render them productive of good works. Chastisements more or less severe, blessings of every kind, exhortations and warnings, by the mouths of his prophets and ministers, with the examples of our fellow-creatures, and a thousand other means, are employed by a gracious God to draw us into his holy communion, to sanctify us, and render us capable of bringing forth the fruits of piety and of virtue. Sometimes a storm gathers, the sluices of heaven are opened, the rivers burst their banks, and the country far round is desolated with the wide sweeping inundation; at other times, God calls forth from the earth the sweet dew, and thus listens in secret to the prayers which the husbandman had uttered for rain. So also he operates in different ways for the salvation of man. To some hardened hearts he speaks in thunder and lightning, as formerly from the top of mount Sinai; others he calls unto him, in a voice milder than the evening zephyr, and sweeter than the breath of morning: he awakens their slumbering faculties, and fresheneth their souls with the beneficent dew of his grace.

Let this gracious mercy of God raise in us ardent desires to imitate his heavenly goodness; let us use all our exertions to reclaim the wicked from their evil ways, and direct the steps of those who have strayed, into the true path. But let us ever remember the merciful kindness of God, and after his example endeavour to recall the mistaken deluded children of iniquity, by mild persuasion and brotherly entreaties. We see how he refreshes the parched earth by his dew, and gives new life to vegetation. Let us then think upon the number of our fellow creatures bowed down by affliction, and languishing for want of assistance; and let not their sighs pierce our ears in vain, neither let us turn away from their complaints, nor refuse the tear of sympathy to their misery when we are unable to relieve all their necessities. Let us by our kindness diffuse the cheering rays of consolation into the hearts of those that mourn, and pour blessings upon our fellow-creatures, abundant as the morning dew.

JUNE XVII.

Mode of Life and Labours of Bees.

In these gay and joyful days of summer, every thing in the animal kingdom is in motion, all is full of life and activity; but no creatures are so active for our advantage as the little republic of bees. Of all the insects with which we are acquainted, none are more worthy of our observation, or present us with a more agreeable and profitable spectacle.

Bees generally dwell in great numbers in hollow trees and cavities, or in a kind of baket called a hive, which men have formed to collect them together. They fly abroad, and disperse themselves over the country, and by means of their trunks or proboscies extract honey and wax from the juices and stamina of flowers. This they bring to their dwelling, which they fill with hexagonal cells, in some of which they reside; others are destined to receive the eggs and hold their young, and others form magazines where they deposit the honey which is to support them during the winter.

Amongst all these bees, which together form one large family, there is one greater than the rest, of the female sex, and on that account called the queen. To her alone all the young of one hive owe their existence; from the eggs which she has deposited in the cells little grubs are produced, which the working bees feed for some time with their trunks. These grubs remain in their cells, which are clothed with a covering of wax, for fifteen days, in a state of perfect repose; in this quiescent form they are called nymphæ. When the proper time is arrived, they open their cells, and come forth in the shape of young bees. Besides the queen, there are two other species of bees in each hive; the labouring bee and the drone. These latter are males, and impregnate the queen, as well as serve her for a guard. Bees have, fixed in their heads, two antennæ or horns, which defend their eyes and warn them of danger; they have fangs or claws, which they use in their labours; and a trunk or hollow tube, that they can project from or draw into its sheath at pleasure. This instrument, flexible and moveable in every direction, forces itself to the bottom of the cup of flowers, where it collects the honey, which passes through the tube into a little bag placed within their bodies, whence the honey is afterwards poured out into the cells.

Bees have six feet; with the two first and their fangs they form their wax which was the farina of flowers into little balls, and with their middle feet place them in a hollow which they have in their hinder feet, which are furnished with hairs that retain the wax, and prevent its falling off while they fly. Thus, laden with honey and wax, the working bees return to their hives without missing their way, though they sometimes fly the distance of several miles. When arrived at home, they meet other bees waiting to assist them to discharge their burthen, and then they all unite together to employ the provisions to the best advantage for the hive in general. With the wax they close up the crevices of their dwellings, to prevent any any animal intruding; and they leave only such openings as are necessary for their own convenience. The queen and working bees have at the extremity of their bodies a sting enclosed in a sheath, which they use to wound or destroy their enemies; but when the sting remains in the wound which they make, it is generally fatal to themselves.

Every thing in these little animals is wonderful, and highly deserving of our attention. The structure of their limbs, so regular. and well adapted to their mode of life; the care which they take of their young, the art with which they construct their cells; and their activity, industry, and intelligence; all excite our admiration, and bespeak the agency of a superior power. Thus, if we wish to meditate upon our Creator, contemplating a hive of bees will lead us to him, and call forth our adoration of that power, wisdom, and goodness, so eminently displayed in the production and operations of these little creatures.

JUNE XVIII.

External Parts of Plants.

In order to form a just idea of the inimitable art displayed in the vegetable kingdom, we must proceed by degrees. Our faculties are too limited to take in the whole at one view, or to acquire a perfect knowledge of it in this state of existence. We must therefore content ourselves with a few observations, and proceed from visible to invisible things; from simple and individual objects to those which are more complicated and general. Let us begin then with the external parts of plants, and first examine the roots. These are so constructed, that by means of the principal root and the little fibres that proceed from it the plants are fixed in the earth. The pores of the root enable it to imbibe the aqueous and nutritious juices which the soil contains. From the root grows the stem, to which the plant owes its strength and beauty: its structure differs according to the nature of the plant: sometimes it is in the form of a tube, strengthened by different knots which are skilfully arranged; and in other plants the stem is so slender, that it requires a support round which it may twine and fasten itself by little hooks which proceed from it. In others the stem rises majestically like a pillar, and becomes the ornament of the forests, seeming to defy the winds and the tempests. The branches extend themselves like arms, and are regularly distributed; they enlarge themselves, and divide into others which are collaterally disposed in the same order with the principal branches. The buds which sprout from them are small plants, which if inserted in the earth, will take root, and in time grow up like the tree from which they were taken.

The leaves, those lovely, beautiful ornaments of plants, are regularly disposed round the stalks and branches; and amongst thousands we can scarcely find two that exactly resemble each other, each one differing in structure, figure, size, and beauty. Leaves are either simple or compound, hairy or fleshy, smooth or curled and indented. The blossoms of trees, which form one of nature's chiefest beauties, are not less diversified than the leaves: some are simple, and have only one flower; others have several. They present every variety of shape and appearance: some of the petals are disposed carelessly round the plant; others form circles, garlands, and clusters. From the centre of the flower rises a little pillar, and sometimes several which are hollow within, and round, or pointed, at the top; these are called pistils, and they are generally surrounded by lesser pillars called stamina, which support the anthers, containing a very fine powder, which is the farina or pollen. Many of the blossoms have a texture of an indescribable delicacy, with a most exquisite fragrance, and beautiful diversity of tints.

To the blossoms succeed fruits and seeds, which repair the waste of the seasons, and afford a very agreeable souce of nourishment; they enclose under one or more skins or coats the germs of future plants. The external form of seeds and fruits varies as much as that of leaves and flowers.

All these parts of plants have their peculiar use and design; if the least of them be taken away, the plant loses a part of its perfection; either its beauty, growth, or increase, will suffer. Thus, all these several parts are essentially necessary for the completion of the whole. If a tree is stripped of its leaves, it will soon become dry, decay and wither. The same thing will happen with all other plants; they possess nothing superfluous, nothing that is not useful, or that does not tend to the perfection of the whole.

When we view this beautiful connection, harmony, and arrangement, throughout the vegetable kingdom, and see that the whole is regulated by general laws, though differently applied, must we not immediately and without hesitation acknowledge, that the Author of all these beauties is a Being of a superior nature, enjoying a supreme power and wisdom? This will be the necessary conclusion of every one capable of thinking, and justly weighing causes and effects. Let us then raise our souls towards our heavenly Creator, who is every-where visible in his works, and whose wisdom shines in the smallest blade of grass. He who accustoms himself to reflections of this nature, will be more sensible of the pleasures of summer, and feel more life and joy from the beauteous objects it presents to his views. The more we contemplate the works of nature, the more shall we admire the wisdom of God; and the more we reverence his wisdom, the greater will be the pleasure we shall derive from the contemplation of natural objects.

JUNE XIX.

Hymn of Thanksgiving for the Works of Nature.

To thee, O Lord, from whom all blessings proceed, and who dispensest them with a liberal hand, to thee belong glory, honour, and thanksgiving. Thou hearest the cries of the young raven, and delightest in the song of the lark; be pleased to hearken also unto my voice, and receive the praises of a grateful heart. The least of thy creatures proclaims thy wisdom, and the traces of thy goodness and power, beheld from one end of the year to the other, are continually renewing.

With the tenderness of a father thou providest for the wants of all thy creatures, and givest them their proper food. The returning sun, as he daily illumes the eastern horizon, witnesses the endless succession of thy benefits, showered down in profusion upon all created nature. O God, who is like unto thee!

Teach me, O Lord, how to praise thee with acceptance, and incline my heart to love thee, that henceforth I may only live for Him who loadeth me with blessings.

It is in thy name, and in the hope of thy blessing, that the husbandman commits his grain to the furrow. It is thou who formest the seed, and enduest it with fertility. The earth, which once was cursed by the sins of mankind, blessed again by its Creator, now brings forth an abundance of fruits.

Thou causest the fertilising rains to descend upon the furrows of the field; thou clothest the meadows, the valleys, and the plains, with flowers, herbs, and groves; and thou directest the cool and refreshing dew to revive our gardens and fields, and to shed upon them fertility and abundance.

The dry and parched land thou waterest with beneficent rains; the wet and the cold places thou warmest with the cheering rays of the sun: thou orderest the seasons and the weather with wisdom, and disposest them in the manner most beneficial to mankind; and amidst every vicissitude of heat and cold, of rains and drought, we still see grow, flourish, and ripen, the food which thy goodness has destined for us.

Thou coverest our fields with rich harvests, and the wings of the wind make the yellow ears undulate; thou beautifiest the summit of the dry rock with the clustering grape; thou biddest the clover spring up in our pastures, and at thy desire the fountains and the rivulets refresh the thirsty animals.

Thou causest the tree to take root, and makest it flourish; a vivifying sap circulates through the trunk and branches, and gives them strength to push forth leaves and blossoms; and the fruit, which bends down the branches, shows how much thou delightest in doing good.

Let us then ascribe all glory and praise to our Creator and Benefactor; let us bless and celebrate his name in songs of joy, and attune his mercy in hymns of gratitude: for great is the eternal God, holy and wonderful are all his works, he is all pure and good, and the righteous for ever shall sing his praises.

JUNE XX.

Caterpillars.

CATERPILLARS form a very beautiful part of the creation; though from generally living upon our trees, they are disliked by the cultivators of gardens, and are seldom considered as objects of attention; many people indeed only notice them for their destruction. But if we investigate their nature, and observe them minutely, perhaps we shall find cause to admire them; and our curiosity being awakened by their appearance, we may be less disposed to trample under our feet an insect whose structure is so wonderful, and which will lead the properly reflecting mind to consider the Creator of all living things.

The species of this insect already known are more than three hundred, and new ones are daily discovered, all differing in colour, form, propensities, and modes of life; but they have in common the annular structure, or the being composed of several rings, which, elongating and contracting, facilitate the moving of the body from one part to another. They have two kinds of feet, each of which has its peculiar use. The six fore feet form a sort of hooks, with which they cling to, or lay hold of objects; the termination of the hinder feet is broad, and armed with small pointed nails. With the hooks they draw up the leaves, grass, and other nourishment; and by these fix the fore part of the body till they have drawn up the hinder part.

The hinder feet they use to hold themselves fast, and to grasp whatever they rest upon. When upon a twig or a leaf, they can seize another at a considerable distance; for, hooking their hinder feet upon whatever they rest, they elevate the fore part of the body, standing almost erect, move in all directions, poise themselves in the air, and turn round, reach their food, and hold it with their hooks. However well the body of the catepillar is adapted to its necessities, its state is very transitory; its limbs last only a short time; and this creeping worm soon becomes a chrysalis without feet and without motion, till it becomes a winged inhabitant of the air.

From this circumstance only, caterpillars should claim some share of our attention. Towards the end of summer, and frequently sooner, after being satiated with verdure, and having changed their skins more than once, they cease to eat, and begin to construct a habitation, where they leave the caterpillar state, and are transformed into butterflies; this place of shelter is called the chrysalis, and is of an oval form; towards the extremity are rings, which continue diminishing till they are lost in a point. The chrysalis is full of milky fluid, which supplies the infant butterfly with nourishment till it comes out. When it is completely formed, and its parts have acquired a proper degree of consistence, and a gentle warmth invites it forth from its prison, it forces a passage through the largest end, which is at the same time the thinnest part of the chrysalis. Its head, which was always directed towards this end, disengages itself, the antennæ project and lengthen, the feet and wings extend, and the insect flies away, retaining nothing of its former shape: the caterpillar which was changed into a chrysalis, and the chrysalis which became a butterfly, being quite different creatures. The one is rough, hairy, and sometimes of a disagreeable aspect; the other is decked in the most beautiful colours: the one is doomed to crawl upon the earth, while the other lightly skims from flower to flower, and delicately sips their nectareous sweets.

Perhaps this description will conquer the aversion that some people have to these insects, and reconcile them with their existence; but perhaps there will yet be many who will ask for what purpose insects, which devour the leaves, and occasion the trees to be blighted, were created? To such I answer, that they are necessary links in the great chain of animal life; and without them the world would be less perfect than it is. Destroy them entirely and you would deprive the birds of a most plentiful source of nourishment; and surely, if birds are destined to feed upon caterpillars, whatever be our loss, we cannot with justice exclude these insects from feeding upon leaves. And even if we cannot comprehend the reason why God formed such creatures, surely we ought not to assert that they are useless; we should rather acknowledge our ignorance, and bow before him who is all-wise.

JUNE XXI.

Beginning of Summer.

On this day summer begins. Many of us have often seen the changes which constantly take place at this season of the year; but have we considered why the sun continues so long above the horizon, why this is the longest day in the year, and why, from this time till the end of autumn, we perceive the heat and the length of the days diminish in the same proportion? All these changes proceed from the annual revolution of our globe round the sun. When this star enters the tropic of Cancer, the earth is so situated, that the whole of its north pole is turned towards the sun; for the earth's axis is inclined towards the north, and it invariably preserves this direction. On this inclination, and the parallelism of the earth's axis, the vicissitudes of the seasons depend. And who, that considers the consequences which would ensue if the direction of the axis had been perpendicular, will withhold his admiration and gratitude for that superior wisdom which has thus regulated it for the advan- of man?

Nature has now nearly finished her annual labour in our climate. She has already lost part of her variety; and though nothing can be more beautifully green than the vines, the orchards, and the forests, the shades begin to be less pleasing, the meadows whiten, and the flowers are cut down; the corn gradually grows yellow, and the rich colouring of nature diminishes. The diversity and brightness of this, and the varied notes of numerous birds, had lately all the charms of novelty, and cheered us with their sweet variation: but now, as autumn approaches, these enjoyments cease; the nightingale is silent, and walking is inconvenient from the excessive heat.

From this picture we may form an emblem of life, the pleasures of which are equally fugitive; even the most innocent, such as nature offers us during the spring, fade, and give place to other objects; and what we now witness in the summer of nature, we may observe in the summer of life.

As we advance in years, the pleasures which delight us in our youth no longer affect us; and when we have attained the autumn of our days, we become subject to cares and anxieties to which we formerly were strangers: as our age increases, our bodily powers diminish; till at length, after many a weary day, the period arrives when, feeble and exhausted, we have no longer a pleasure in existence.

With what a lively sense of joy may the good man lift up his soul to thee, O Lord! who directest the seasons, who art the father of all things, and the source of all happiness! Let us acknowledge thy wisdom and thy goodness in causing the seasons to succeed each other in a regular order; and may we never forget thee when we enjoy the blessings which summer scatters over the earth, and experience the pleasures which smiles in her train! Let us reflect that this may be the last summer which we may be permitted to see on earth; and consider how soon we may be called to join the numerous friends who have been removed from this transitory scene since the last summer's sun beamed light and beauty upon our sphere.

JUNE XXII.

The Nightingale.

The nightingale is one of the sweetest songsters among the inhabitants of the groves. When all the birds that cheered us during the day with their varied notes cease to be heard, the song of the nightingale swells upon the air, and animates the groves. When we rapturously listen to her voice, pouring melody in the woodlands, we are ready to conclude that the bird from which such sounds proceed must be large, and possess a throat of uncommon strength; and her sweet accents make us persume that, as she excels in harmony, so she surpasses the feathered race in beauty.* But we shall look in vain for these perfections in the nightingale; which is a bird of rather a mean appearance, having nothing particularly attractive either in form or plumage; yet it is gifted by nature with a voice that fills us with ecstasy, and pours rapture through all our frame. How exquisite is our delight when we listen to her long quivering notes, and hear her sweet variations, now gently warbling, then gradually swelling into inconceivable force and rapidity; alternating plaintive accents that sooth the soul to melancholy, with gay airs that raise it upon lightsome wings to joy and pleasure: she rapidly passes from the

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* As to the idea of connecting beauty with melody in a bird, unless the author means that the bird which utter strains like those of the nightingale cannot be otherwise than beautiful, I believe it is [illegible] always the case; for those birds which have the most beautiful and brilliant plumage have often the most harsh and unpleasing notes; witness parrots, parroquets, peacocks, and a variety of others; and so far from our imagining the bird that enchants us with melodious strains to be large in size, we know of scarcely any large bird which has very sweet notes: if so, whence is the ation of greatness of bulk and melody of voice?

simplest notes to the wildest carols, from the lightest turns and quavers to slow melting strains that languish upon the breeze, then softly die away, and leave the night-wanderer silently to retrace his homeward ste[illegible]

This bird may give rise to many useful reflections; from it we may learn a very wholesome truth, that plainness of person does not exclude beauty of soul, but may be allied to the most estimable qualities. How absurdly and erroneously do those people judge, who, fascinated by a regular contour of face, beautiful countenance, and elegant proportion of limb, only bestow their approbation upon what pleases their senses, and despise or disregard such as labour under bodily infirmities, or are not gifted by nature with the graces of person. Let us learn to judge with more equity, and to discriminate with more attention; for is is not alone symmetry of limb, elegance of form, or advantages of fortune and rank, that ennoble a man, and render him worthy of esteem; it is the superior perfection of his soul, and the finer feelings of his heart, which can alone exalt his nature, and place one man higher than another in the great chain of beings. Those who are incapable of virtue, and destitute of reason, will necessarily be deluded by the false colouring of external appearance, and, unable to penetrate beneath the surface, will be dazzled by the empty parade of riches, and misled by the ostentatious display of splendid insignificance. But have we not seen men on whose humble birth fortune never smiled, nor honours distinguished, raise unto themselves eternal monuments of fame and glory? And have we not known men whose bodies were formed in nature's coarsest mould shew a magnanimity of soul and a greatness of mind that will endear them to our bosoms and entwine them round our hearts? Let us then not easily trust in opinion hastily formed, and founded only upon external appearance; for often those whom we have presumed to despise, are superior to ourselves, and deserving of our warmest admiration and regard.

When we listen to the sound of the nightingale, let us remember who gave it such pleasing powers; and let us consider the wisdom of a structure which enables it to produce such sweet sounds. A viscus so delicate as the lungs of this little bird, whose exertions are so violent, would be very liable to receive injuries, if it did not possess the singular advantage of being attached to the vertebræ of the back by a number of little fibres. The opening of the windpipe is very wide, and this very probably contributes to its great diversity of notes.

Sweet songster! I will not leave thee till I have learned of thee to celebrate our mutual Creator: and mayst thou pour, with thy wild warbling strains, joy and gratitude into the hearts of all who in these lovely evenings are revelling in the sweets of summer unconscious of their Maker!

JUNE XXIII.

The Pleasures which Summer offers to our Senses.

SUMMER has inexpressible charms, and daily gives us proofs of the infinite beneficence of God. It is the happy season in which he most abundantly pours forth his blessings upon every living creature. Nature, after having refreshed us with the pleasures of spring, is continually at work during the summer to procure us every thing that can gratify the senses, make our subsistence comfortable, relieve our necessities, and awake in our hearts sentiments of gratitude.

We see all round us, in the fields and in the gardens, fruits, which, after having delighted us with their beauty and gratified our taste with their sweets, may be collected and preserved for our future convenience. The flowers present us with the most agreeable variety: we admire their rich colours, and rejoice at the inexhaustible fecundity of nature, in their multiplied species. What a beautiful variety is displayed in plants, from the lowly sprig of moss to the majestic oak! Our eye glances from flower to flower; and whether we climb the steep mountain descend into the valley, or seek the friendly shade of the woods, we every-where find new beauties, all differing from one another, but each possessing charms sufficient to engage our attention. There we see innumerable flowers diffusing their sweetness to the air, that softly kisses their blushing leaves; and here various creatures sporting wild, free from care. We look up, and a clear blue sky presents itself; beneath, the fresh verdure smiles: our ear is ravished with the tuneful notes of the winged songsters; their various and simple melody wraps our soul in joy, and sweet sensations fill our bosoms. The soft murmuring of the distant brook, and the silver waves of a clear smooth stream gently gliding beneath the over-hanging willows, lull our souls to ease, and nought but love and pleasure dwell in our unruffled breast.

Thirsty and fatigued, the modest strawberry offers us sweet refreshment; the gardens and fields fill our granaries with their fruits, and supply us with the most agreeable sustenance. The smell is gratified with the fragrance that every-where perfumes the air; and thousands of charming objects delight our senses, and call forth our sensibility. Numerous flocks and herds feed upon the bountiful profusion of nature, and furnish us with milk and nourishing aliment. Abundant showers fall to refresh the earth, and open to us new sources of blessings; smiling groves and tufted trees kindly shelter us from the sun's fervid beams;

and every thing around us increases our pleasures and adds to our felicity. If the senses derive gratification from these luxuriant scenes, the mind is not less delighted. It discovers beauty, harmony, variety; and in every object traces the all-creating hand, the spring of life, and source of all good. Yes, admirable Being! we see thee in every creature: if we contemplate the Heavens, the Sun, the Moon, and each Star inform us that thou hast made them: all that we perceive through the medium of our senses leads us to thee, and thus our sensations become dignified and exalted, whilst our thoughts soar upward, and are lost in thy infinitude.

JUNE XXIV.

Sketch of the internal Parts of the Human Body.

THE more difficult it is to acquire a proper knowledge of the internal parts of the human body, the more necessary it is to profit by the labours of skilful anatomists. With the view of facilitating the knowledge of those parts, I shall here present the reader with a short description of them. The structure of the heart, the great spring of life and motion, first merits our attention. This viscus, situated in the chest, is composed of muscular fibres, curiously interwoven; two cavities, called ventricles, separated from each other by a partition, form the interior of this organ. Contiguous to the heart, within the chest, are the lungs, which alternately open and shut, when they receive or expel the air, something after the manner of a pair of bellows: they nearly fill the whole cavity of the chest, which is lined with a very fine membrane called the pleura.

The abdomen is separated from the chest by a muscle called diaphragm, and contains several viscera, the most important of which is the stomach, a membranous bag. which receives and digests the food. To the right of the stomach is the liver, which secretes bile from the blood, a part of which is received into a little bag attached to the liver, and called the gall-bladder; it is conveyed from thence into the intestines, and stimulates them to action. On the opposite side, and near the stomach, is situated the spleen, a spongy viscus of an oval figure, the use of which is not rightly understood. Beneath the liver on one side and the spleen on the other are the kidneys, which secrete from the blood an aqueous fluid, afterwards conveyed to the bladder by two excretory ducts called ureters. In the lower parts of the abdomen are situated the intestines, a long membranous tube divided into small and large. In the small part, the alimentary matter which has passed through the stomach is converted into chyle, and the portion that remains unfit for nourishment is expelled by the lower and larger division of the tube. The intestines are connected with the mesentery, a membranous duplicature, which contains numerous fine vessels, called the lacteals, as they contain the chyle or milky fluid separated from the food. There are also numerous glands in this organ, called mesenteric glands; the lacteals enter these, and proceed to the thoracic duct, or the tube which conveys the chyle into the blood. The whole internal surface of the abdomen is lined with a membrane called peritoneum, which covers all the viscera; and a fatty production of which, called omentum, lies on the superior surface of the intestines.

These are the principal viscera in the abdomen and chest; but there are several others connected with them. At the beginning of the neck is the œsophagus and the trachea. The œsophagus is the tube through which the food passes from the mouth into the stomach, and the trachea is the tube through which the air passes into the lungs; a small valve at its superior orifice, whilst it admits the passage of air, prevents that of any other fluid or substance, which, by its irritation in the lungs and air-vessels, would be the occasion of fatal consequences. There is a valve also placed in that orifice of the stomach which enters the intestines; it opens to suffer the food to pass, but prevents its returning.

Within the cranium or skull is situated the brain, enveloped in a very fine membrane full of blood vessels, and called pia mater; a second membrane, much thicker and stronger, adheres to the internal surface of the cranium; and between these is a third membrane, so very delicate and transparent, as to be scarcely perceptible. Besides these parts, each of which has a determinate place, there are others which are dispersed over the whole body, such as bones, arteries, veins, lymphatic vessels, muscles, and nerves. The bones are united together by joints, and serve to support the body, to render it capable of motion, and to preserve and protect the softer parts. Veins and arteries circulate the life-sustaining blood throughout the body. The nerves, of which ten principal pair are enumerated, are small white cords; they proceed from the brain, are distributed to every part of the body, and are the organs of sensation and motion. The whole body is full of pores so small as to be imperceptible to the naked eye; and through these is continually exuding a subtle matter called the insensible perspiration. No less wisdom is manifested in the fluid than in the solid parts of the body. The blood, chyle, lymph, bile, marrow, and the different kinds of viscous and glutinous humours secreted by various glands; their different properties, their destination, effects, and the manner in which they are separated and prepared; their circulation and renovation; all bespeak the most astonishing art and the profounded wisdom.

Let us now recapitulate all the excellencies of our structure. The bones, by their solidity and their joints, form the foundation of this beautiful superstructure; the ligaments are tendinous cords, which unite different parts together: the muscles are fleshy substances, which perform their functions like elastic springs; the nerves, which extend to the most distant parts of the body, communicate the power of sensation, and enable the different organs to perform their functions; whilst the arteries, and veins, like inexhaustible rivulets, pour the life-streams to every part. The centre of circulation is the heart, from and to which all the blood proceeds; and respiration is performed by means of the lungs. The stomach and intestines are the organs where the food undergoes those changes which are necessary for the support of life. The brain is the common centre from which the nerves proceed to communicate sensation to the body, and enable the senses to receive the impressions which they convey to the soul.

Adorable Creator! how wonderfully has thou found us! Though the heavens, which so magnificently display the glory. were not to exist, though I was the only being upon the face of the earth, the admirable structure of my body alone would suffice to assure me of the immensity of the power, and convince me of thy immeasurable wisdom; Let us then, as often as we meditate upon this wonderful organization of our bodies, praise Him who has so formed us, and offer up our thanksgiving for his manifest goodness.

JUNE XXV.

Electricity.

From the numerous experiments which have been made upon the subject of electricity, no one can doubt the existence of a matter which, from its singular effects, has excited the attention of Europe for more than half a century. It appears that this fluid is equally diffused though all bodies, but is so extremely subtle that we cannot perceive it, and we only know it to be present from the effects it produces; when put in motion it rushes from one part to another to restore the interrupted equilibrium. It is necessary to distinguish two kinds of electric bodies; those in which the electric fluid may be excited by means of friction, and those which receive their electric power by communication with the former. The principal substances which compose the first class, are, glass, pitch, resin, sealing-wax, hair, silks, and air; to the second class belong water, metals, &c. Bodies of the first kind may be made capable of perserving the electric matter collected in them, whilst those of the second class lose it as soon as they receive it*. Machines have been invented, in which, by means of a wheel, a rapid rotation is given to a glass globe, or cylinder, upon which is placed a cushion of silk, against which, whilst whirling round, it rubs. By this friction the globe preserves its electric virtue, which may be extended to any distance by means of metallic bars, or chains which communicate with the glass. If, while the machine is working, we touch the chain, we immediately receive a shock; and, if the room is darkened, a luminous spark will be perceived. Let any number of persons join hands and form a circle, and by means of the chain make a communication with the machine; and they will all receive a shock at the same time, which may be more or less violent. The electric fluid may be accumulated to such a degree as to kill by its discharge the largest animals.

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* Those substances mentioned in the first class, to which may be added diamonds, balsamic and bituminous bodies, as amber, sulphur, &c. the coverings of animals, as feathers, wool, bristles, silk, vitrified bodies, and all substances that, when rubbed, attract light bodies, are called electrics or non-conductors. Those on the contrary in which, when friction is employed, the electric fluid is not excited or put in motion, are called conductors or non-electrics; and they consist chiefly of metals, minerals, aqueous and spirituous liquids, living creatures, and animal and [illegible] substances, as trees, plants, bones, shells, &c.

This experiment is performed with several glass jars nearly filled with water, and which, connected together by chains, communicate with the glass globe before described. The water communicates to the internal surface of the jars a great quantity of electric matter, their external surface at the same time losing an equal quantity by means of its communication with some conducting body. A vivid flash, loud explosion, and a violent agitation, ignition of combustible matter, and the death of the subject of the experiment, are the consequences of this experiment.

There are other effects which are common to all experiments of this kind; such as a sulphureous smell, an agitation in the air, a sudden flash, and the electric matter acquiring a new property. Some experiments have failed because the metallic rods which served as conductors were too angular and pointed. It has been suspected that the electric fluid in such cases was dissipated by means of the points; and this was confirmed when on approaching the face or hand to the point of the rod, a copious stream of electric fluid emanated from them; it was also conjectured, that these points which throw off the electric fluid might attract it, and a number of experiments have since established it as a truth.

Electricity has been applied by physicians in many complaints with great success; and a still greater advantage which we derive from its investigation, is the analogy which naturalists have discovered between electricity and lightning, which has given rise to new conjectures upon the nature of thunder; and has taught us to secure our buildings, by means of metallic rods, from the destruction they often suffer during a storm.

Thus we are continually receiving new solutions of the mysteries contained in the great works of nature; and from the success of these investigations we should be excited to more industry, and to pay greater attention to the works of the creation daily offered to our view.

JUNE XXVI.

Manner in which Thunder is formed.

FORMERLY, and even to the beginning of the eighteenth century, it was commonly supposed that thunder was occasioned by the agitation of saline, sulphureous, and other substances contained in the air. It was imagined that there was the greatest resemblance between the effect of fire-arms and that of thunder and lightning. But all the means by which men endeavoured to explain and establish this system, were not sufficient to do away the difficulties that presented themselves, nor to account for the fact. Since that period, however, the phenomena produced by the electric fluid have been more attentively observed, and a very different cause has been assigned to the formation of thunder. The great resemblance between it and electricity has convinced naturalists that they are produced by the same causes, and that electricity is in our hands what thunder is in nature. It will not be difficult to demonstrate this, even to those who are ignorant of natural philosophy, if they will only take the trouble to compare the effects of thunder with those of electricity.

The effects of thunder are known by peals heard at a greater or less distance, and by flashes of fire; buildings struck by it are often consumed by flames;

men exposed to it become black, and appear scorched, though there is sometimes no trace of fire, the violence of the stroke having killed them: their clothes are torn, they are thrown to some distance from the place in which they were, and frequently the part of the body which was struck is pierced with holes. Sometimes large stones are broken by the thunder, and its ravages are easily discovered on the ground where it strikes.

Electricity presents us with similar effects, but in a less degree. When by means of water its force is increased, the electric flash is followed by a very evident commotion; the most compact bodies are perforated, birds and other small animals are deprived of life, and each flash is succeeded by a report. The stream of fire also, which passes from the points of electrified bodies with the hissing noise, is one of the phenomena observable in lightning; and with respect to velocity, there is still greater resemblance between thunder and electricity. If during a storm a sword or chain is suspended in the air by silken strings, they become electrified, and if the finger is advanced near them, sparks proceed from them with more or less force and brilliancy, according to the violence of the storm, and the distance of the electric cloud; in short, every effect of electricity is produced during a thunder storm. From all these circumstances, we can no longer doubt that the air during a storm is highly electric, and that thunder and lightning are merely the effects of a violent electric fire*.

Thus, all that appears supernatural in these phenomena, and the terror that they consequently excite, will be done away as we become better acquainted with the laws of nature. This should induce every one to acquire, at least, the first principles of natural philosophy. We should then no longer see fear and superstition enervate the mind and paralise our exertions in the investigation of nature. Let us employ the little light we have, to dispel the fear which troubles us at the approach of a thunder-storm; and, amid the lightning's flash and the roaring of the tempests, we shall regard with a tranquil bosom the God of all, who "rides in the whirlwind and directs the storm." For however we may be able to assign the causes of thunder upon just and invariable principles, drawn from natural philosophy, the phenomena are not less remarkable, and present some circumstances which are inexplicable, even to the most enlightened mind. It is sufficient for us to know that the nature of the air, and the peculiar properties of the surrounding atmosphere, render this phenomenon necessary: that these storms are essential to the fertility of the earth, and should therefore excite us to render our tribute of praise and thanksgiving to the all-bountiful Creator.

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* Lightning, then, is nothing more than the electric fluid contained in the clouds passing into other bodies, and thus interrupting the equilibrium, and producing concussions in the air, or that noise which we call thunder; and the reason that lightning is seen before the thunder is heard, is that light travels with a velocity inconceivably greater than sound.

JUNE XXVII.

Herrings.

In this season of the year the herring-fishery begins on the coasts of England and Scotland; by which we shall soon receive a great abundance of fish, which supply the inhabitants with food during a considerable part of the year. Let us examine what is most important in the natural history of these fish.

An innumerable multitude of herrings live in the Icy sea, near the arctic pole; at a certain time they quit this abode, and arrive in shoals upon the coasts of England and Holland. The cause of this emigration is not yet ascertained; some suppose it is to escape from the whale, and other great fish of the Icy sea; others imagine that the prodigious multiplication of herrings is the cause of their taking these long voyages; that finding themselves too numerous under the northern ice, they are obliged to detach colonies to other places, that they may have a sufficiency of food for their support. Perhaps it is the desire of propagating their species, and a particular instinct, which leads them to places more favourable for their increase and preservation.

Whatever cause influences their motions, it is certain that immense shoals of herrings proceed from the north in the beginning of the year, for as early as the month of March the western wing of this aquatic army reaches the coast of Iceland: they are there so extremely numerous that upon plunging the bucket with which they water the sails of the vessel into the sea, they draw up great numbers of these fish. The eastern wing advances farther into the Baltic sea: one part of it stretches towards the North Cape; descends to the coast of Norway, and then enters the Baltic through the Sound. Another division steers for the northern point of Jutland; and afterwards enters into the Zuyder-zee, and passes thence into the Baltic, to return to its former station. The most numerous detachment of the eastern wing proceeds to the western coasts, and arrives at the Orkney islands, where the Dutch go to catch them. About the eighth of June the sea is there filled with them, they afterwards shape their course towards England and the coasts of Scotland, and fill all the bays and harbours with their fry. They then disappear, and those which have escaped the nets of the fishermen and the numerous large fish which prey upon them, most probably return northward to the place from whence they emigrated.

A single herring deposits at least ten thousand eggs in the sea upon the British coast, and this great fruitfulness of a single fish among so many millions makes what is reported of the Dutch fishery credible; they are said to take annually about two hundred millions of herrings, by which a great number of people are supported, and more than twenty millions of crowns added to the Dutch revenue.

*JUNE XXVIII.

Eclipses of the Sun and Moon.

In this enlightened age, it is highly indecorous for any one to be ignorant of the phenomena of an eclipse. From a want of this knowledge have proceeded the superstitious fears which so often agitate the minds of the ignorant during an eclipse of the sun or moon; while, if the cause was understood, the folly of shutting up wells at such a time, for fear the water should acquire a noxious quality, and the absurdity of using other precautions, would be manifest, whatever men do under the influence of superstition is a strong proof of their ignorance and impiety. Let us then inquire into the true cause of such astonishing effects, our thirst for knowledge will be gratified, and we shall find fresh occasion to gratify our great Creator.

An eclipse of the sun is a natural effect caused by the shadow of the moon projected on the earth. But this can only take place when the moon, which is an opake body, is nearly in a direct line between the sun and the earth, in this case the moon, either partially or entirely, intercepts our view of the sun; and one is called a total, and the other a partial, eclipse. Thus the solar eclipse is nothing more than the situation in which the earth is placed when the shadow of the moon falls upon it, and consequently, properly speaking, it is only an eclipse of that part of the earth where the moon's shadow falls.

Hence we learn that the sun is not really darkened, but is only, for a short space concealed from us by the intervention of another body, whilst he still blazes in all his splendour, and the only change that takes place is, that the rays emanating from him cannot reach the earth, because the moon intercepts their progress. Hence also a solar eclipse is never visible at the same time from every part of the earth; for the eclipse could not be preceptible from all places in the hemisphere at the same time, unless the sun had effectively lost all his light; on the contrary, it appears greater in some countries than in others; and there are countries where it is not visible at all.

The moon not only at times darkens the earth, but the earth also casts its shadow upon the moon, and thus partially or totally intercepts the rays of the sun by which an eclipse of the moon is occasioned. This can only happen when the moon is on one side of the earth and the sun on the opposite side, consequently at the time when the moon is at the full: and as this planet is really obscured by the earth's shadow, the eclipse may be perceived at the same time from every part of one hemisphere of our globe.

Should it be asked of what use are the lunar and solar eclipses; I would answer, to those who do not measure the utility of natural things merely by their sensible benefit, they are of very great use. By their means we determine the true position and distance of towns and countries, and trace with exactness maps of the most remote regions; they also tend to confirm chronology, and direct the navigator, by informing him how far he is distant from the east or from the west. Unimportant as these advantages may appear to some, they are of the greatest utility, and contribute in part to the happiness of mankind.

Whenever we witness an eclipse of the sun or moon, let us reflect upon the awful events which will take place on the last day. What terrror will seize the hearts of men when they shall see the sun darkened, and the moon lose her light; when the elements shall melt with fervent heat, and the heavens pass away with fearful sound, as of the rushing of mighty waters. May we then be found fit to dwell in that glorious habitation, where the sun and the moon shall no longer be necessary!

JUNE XXIX.

The Stalk of Wheat.

We see the young corn daily springing up, and the tender ears ripening insensibly, till in a few weeks they will afford us nourishing bread, a blessing which the bountiful hand of Nature has bestowed upon the labours of man. Let us for a while cast our eyes over a field of wheat, and endeavour to enumerate the millions of ears which wave over the surface; and then let us reflect upon the wisdom of those laws which cause such abundance to bless the earth. What preparations are necessary to procure us nourishment so useful and sweet; and what changes must take place before the ear could be formed! It is now nearly ready to reward our care with its nourishing fruits, and invites us to meditate upon its structure.

When a grain of wheat has been some time in the ground it shoots up a stalk, which rises perpendicularly, but advances very gradually, to favour the ripening of the grain. By its growing so high the grain is preserved from the moisture of the earth, which would rot it; and the height of the stalk also contributes to perfect the juices that ascend from the root; and its round form favours this operation, by admit-ing the heat to penetrate every part of the stem. It seems wonderful that so delicate a stalk should support itself, and bear so many grains, without sinking beneath its burthen, or being beat down by each blast of wind; but nature has wisely provided against all these inconveniences in furnishing it with four very strong knots, which strengthen it without lessening its pliability. The structure of these knots evinces much wisdom; like a fine sieve, they are full of very small pores, through which the sap rises and the heat penetrates. The stalk is liable to be beat down by tempests and heavy showers, but its suppleness secures it from injury; it is flexible enough to bend without breaking, if it was more stiff it might be shivered by the storm, and would be unfit for straw.

From the principal stalk others spring up, they are not so high, and bear leaves, which, collecting the drops of dew and rain, supply the plant with those nutritious juices so necessary to its support; whilst the most essential part of the plant, the ear, is very gradually formed. To preserve the tender sprouts from the dangers and accidents which might destroy them the first moment of their appearance, the two upper leaves of the stalk unite closely, to preserve the ears, as well as furnish them with the necessary juices. As soon as the stalk is sufficiently formed to be able of itself to supply the grain with juices, the leaves gradually dry, that nothing may be taken from the fruit, and that the root may have nothing to support which is useless. When these leaves are removed, the young ear waves gracefully in unveiled beauty, and its beard serves it both as an ornament, and as a defence against birds and insects. Refreshed with gentle rains, it flourishes, and inspires the husbandman with the most pleasing hopes; it ripens from day to day, till at length, bowing beneath the weight of its riches, its head falls beneath the sickle, and the farmer joyfully gathers the golden [illegible]aves.

Here we discover new marks of the wisdom and all-beneficent power of God, ever operating for the good of man. How wonderful is the structure of a single stalk of wheat! and what greater proof can we desire of the goodness of our Creator? Open your eyes, ye that are indifferent, and see the fields wide waving round with the choicest gifts of heaven, and you will no longer withold the tribute of praise and of gratitude to your all-bountiful Father: remembering, that he who can view a field of corn without his soul expanding with gratitude, or who does not feel rejoiced at the sight, is unworthy of the bread it so abundantly furnishes. Let us think as men endowed with minds capable of the most exquisite of all pleasures, the discovering the traces of an infinitely good and powerful Being in all the works of nature, by this we shall raise ourselves above the condition of brutes, and approach nearer to the angels of light

JUNE XXX.

The Blight.

PRODIGIOUS swarms of little insects, entirely covering the tops, stalks, and leaves of plants, occasion what is usually called the blight. These insects are as numerous in their varieties as the species of plants they infest, and they merit our attention most particularly from the peculiarities which they exhibit. They not only lay eggs, but they also bring forth their young alive; being both oviparous and viviparous. Whilst the fine weather continues, the young ones issue from the parent insect alive, and completely formed, because at that time the plants can afford them sufficient nutriment; but towards the end of autumn they lay eggs, which are not hatched till the following spring; for if they came to life sooner, they would perish for want of nourishment.

At the time when the female insects begin to lay their eggs, the males are observed to appear, which seems to indicate that their existence was not necessary before that period: and this conjecture is confirmed by the experiments which have been made upon these insects. If we take one at the instant of its birth, and enclose it by itself within a glass, though secluded from all communication with other insects, it will produce a young one as soon as it has acquired a certain degree of growth, and in a few weeks it will be surrounded by a numerous family. If the experiment be repeated upon one of its young, the result will yet be the same, though continued for many generations; which proves that these creatures engender of themselves, without copulation.

Another singularity worthy of observation is, that in some species of insects the males have wings, whilst the females are destitute of them: but in the class of which we are now treating, both sexes are alike in that respect, being either both furnished with wings, or both destitute of them. Those which have wings are so extremely small, that they are seen walking upon those that have none. This remarkable instance of the singularities of nature, so widely differing from the common rules, and where at the same time so much wisdom is observable, leads us naturally to ask, Whence these peculiarities in nature proceed, and why has the Creator thought fit sometimes to deviate from the customed laws? To answer these questions in a satisfactory manner, we ought to be able at once to embrace the whole of the creation, to comprehend all the parts of the vast kingdom of nature with all their uniting links, and justly to appreciate in what and how far any thing would be advantageous or prejudicial to the whole. But from the limited nature of our faculties, such an extensive range of knowledge is denied us, and we must be satisfied with some general reasoning which may in some degree resolve our doubts, and answer the question to our satisfaction.

In the first place, by these singularities in the productions of nature, we see the command which God has over us. He is the supreme Governor, who assigns to each being the laws which he is to observe; and he who has the power to make has also the right to suspend laws, and to make whatever exceptions he pleases. Secondly, we everywhere find in nature a great variety of objects which give us occasion to rejoice in their contemplation, and to admire the glory of the Creator. It is easy to perceive how much these exceptions to general rules increase the variety we observe, and consequently the pleasure of the observer, as well as his admiration for the Author of nature. In the third place experience teaches us that the objects which we daily see become familiar, and the often-repeated impressions render us less attentive to their beauties. The magnificent spectacle of nature does not always interest us, because we acquire the habit of lightly passing over those things which we continually witness. Thus each singularity, each unusual appearance, by arresting our attention, tends to invite us to contemplate, as well as to call forth our admiration of the works of God. And lastly, we may consider the singularities of the physical world, so far from diminishing the perfection of the whole, enter into the plan of the Divine Wisdom, and, together with the singularities of the moral world, are under the direction of an all-wise Being, who governs all for endless glory, perfection and happiness.

END OF THE FIRST VOLUME.

[illegible] ROBBINS, Printer, College-street, Winchester.